AD A023421

Technical Report--Part I

December 1975

THE DEVELOPMENT OF A TRANSPORTATION DEMONSTRATION PROJECT IN A MILITARY COMMUNITY

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SRI Project 3935

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: 330572 (9) Technical rept. Jan-Dec 75,

2. GOVT ACCESSION NO.

3. RECIPIENT'S CATALOG NUMBER

4. TITLE (and Subtitle): The Development of a Transportation Demonstration Project in a Military Community. Part I. (Report and Action Plan)

5. TYPE OF REPORT & PERIOD COVERED: Technical Jan.75 - Dec. 75

6. PERFORMING ORG. REPORT NUMBER: 3935 Rev 1

7. AUTHOR(s): Mary Duffey-Armstrong, (nee Begley) Marc Roddin, Sarita Skidmore, Egils Milbergs

8. CONTRACT OR GRANT NUMBER(s): N00014-75-C-0568 NEW

9. PERFORMING ORGANIZATION NAME AND ADDRESS: Stanford Research Institute, Menlo Park, California 94025

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: NR-364-157 SRI-3935

11. CONTROLLING OFFICE NAME AND ADDRESS: Office of Naval Research, N00014, Fleet Analysis and Support Division, 800 N. Quincy - Arlington, VA 22217

12. REPORT DATE: Dec 75

13. NO. OF PAGES: Part I - 87, Part II - 81

14. MONITORING AGENCY NAME & ADDRESS (if diff. from Controlling Office): Environmental Protection Program, NAVFAC Code 032-B, 200 Stovall Street - Alexandria, VA

15. SECURITY CLASS. (of this report): Unclassified (12) 88p.

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this report)

Approved for public release; distribution unlimited

itted for any purpose of the all EFD Planning Offices and

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from report)

See attached Distribution list

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Passenger Transportation
Energy Conservation
Environmental Protection
Navy-community Program

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This research effort examines the development and application of a cooperative transportation planning process between the Navy and local adjoining communities in Tidewater, Virginia. The Navy in Tidewater as in many other metropolitan areas, offers the opportunity for demonstrating how a cooperative approach could effectively deal with the complex problems faced by urbanized areas. Navy participation in passenger transportation is investigated from the perspective of ongoing programs in environmental protection, land-use planning, and energy conservation. SRI uses a systematic interdisciplinary

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EDITION OF 1 NOV 65 IS OBSOLETE

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

332. 500

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

20. ABSTRACT (Continued) (& fr p 1473A)

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approach) to initiate a cooperative transportation process that consists of five principal steps: understanding the Navy-Community Transportation problem; development of a cooperative planning process; preparation of a transportation action plan; implementation of the plan; and technical assistance during implementation. On the basis of this approach, the Tidewater case-in-point demonstration project reveals a number of the key elements that contribute to initiating a successful transportation process. These include: the early involvement of both the key stakeholders in the community and the Navy; the formation of an adhoc advisory committee for initiating the study and establishing overall objectives; the development of a tool for action (the five-year intermodal transportation action plan—Part II of this report); and, finally, the official endorsement of the cooperative program by both the community and the Navy.

Recommended actions that could enhance further application of the approach also are suggested. These include: the design of transportation user forums and the development of a monitoring and evaluation technique to be applied to the action plan.

Finally, although beyond the scope of this study, two further supportive actions are recommended. For successful implementation, substantial consideration should be given to funding and to more widespread official recognition of these projects.

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Technical Report--Part I

THE DEVELOPMENT OF A TRANSPORTATION DEMONSTRATION PROJECT IN A MILITARY COMMUNITY

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Ref: Contract No. N00014-75-C-0568
364-157/12-10-74(230)

SRI Project 3935

Approved by:

Robert M. Rodden, Director
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George D. Hopkins, Executive Director
Engineering System Division

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ABSTRACT

This research effort examines the development and application of a cooperative transportation planning process between the Navy and local adjoining communities in Tidewater, Virginia. The Navy in Tidewater as in many other metropolitan areas, offers the opportunity for demonstrating how a cooperative approach could effectively deal with the complex problems faced by urbanized areas. Navy participation in passenger transportation is investigated from the perspective of ongoing programs in environmental protection, land-use planning, and energy conservation. SRI uses a systematic interdisciplinary approach to initiate a cooperative transportation process that consists of five principal steps: understanding the Navy-Community Transportation problem, development of a cooperative planning process, preparation of a transportation action plan, implementation of the plan, and technical assistance during implementation. On the basis of this approach, the Tidewater case-in-point demonstration project reveals a number of the key elements that contribute to initiating a successful transportation process. These include: the early involvement of both the key stakeholders in the community and the Navy; the formation of an adhoc advisory committee for initiating the study and establishing overall objectives; the development of a tool for action (the five-year intermodal transportation action plan--Part II of this report); and finally, the official endorsement of the cooperative program by both the community and the Navy.

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ACKNOWLEDGMENTS

The development and implementation of this demonstration project was made possible through the cooperation and efforts of the many participants in the Tidewater area to whom we are sincerely grateful. (A complete list of participants is attached as Appendix A.) In particular, we gratefully acknowledge the support and direction given this project by Rear Admiral Richard E. Rumble, Commandant Fifth Naval District; Commander Lee Carlson, Energy Coordinator, Fifth Naval District; Mr. James Echols, Executive Director, Tidewater Transportation District Commission; and Mr. Robert Foeller, Executive Director, Southeastern Virginia Planning District Commission, along with their respective staffs.

We would also like to acknowledge the valuable guidance provided by the Study Advisory Committee listed below.

Chairman: Captain Fred G. Bouwman, Chief of Staff, COMFIVE

Navy participants:
- Commander Lee Carlson, Energy Coordinator, COMFIVE
- Mr. Dickson Moore, Director of Planning, LANTNAVFACENGCOM
- Lt. Commander Norman Falk, Director of Planning and Real Estate
- Lt. Commander Norman Ricker, Asst. Base Public Works Officer
- Mr. Robert L. Warren, Asst. to the Director of Planning
- Ms. Sandra Austin, Planner
- Lt. Commander Jack Martin, Public Affairs Officer

Community participants:
- Mr. Robert F. Foeller, Executive Director, Southeastern Virginia Planning District Commission
- Mr. Eugene Hatheway, Transportation Planner (SVPDC)
- Mr. James Echols, Executive Director, Tidewater Transportation District Commission
- Mr. Phin Horton, Former City Manager, Portsmouth, representing City Managers
- Mr. Brewer Moore, Planning Director, Portsmouth, representing the cities
- Mr. Henry Cochran, Executive Director, Peninsula Planning District Commission
- Mr. Martin Beyer, Planner, Peninsula Planning District Commission
- Colonel Orman E. Hicks, Executive Director, Peninsula Transportation Commission

Finally, we gratefully acknowledge the support of the Office of Naval Research, and the direction offered by Commander B. F. Montoya, Environmental Coordinator Naval Facilities Engineering Command (NAVFAC), Lt. Commander Charles Farrell, Program Administrator for Environmental Protection,

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Chief of Naval Material, Mr. Donald Pledger, Asst. Director, Installations Planning Division, and Mr. Stephen Hurley, Environmental Protection, program manager and technical monitor for this project, Naval Facilities Engineering Command.

I INTRODUCTION

The impacts of home-to-work commuting by private automobile have become prime targets for research directed toward energy conservation and environmental protection. The current national focus on environmental quality, energy conservation, and land-use planning is largely influenced by transportation.

Military bases are an integral part of a number of urban areas in the United States. The mere physical size of some of the bases has a considerable impact on local land-use planning and the complex problems of moving the people and goods associated with such large developments. Thus, both the military installations and the communities surrounding them must begin to assess the impact of their transportation demands. In addition, they must begin to develop plans for real-world experimentation designed to alleviate associated problems.

As a part of the Environmental Protection Program of the Naval Facilities Engineering Command (NAVFAC), Washington, D.C., the Navy has initiated a research program in passenger transportation. The objective of the study effort is to find ways for the Navy to work cooperatively with civilian communities, state governments, and other federal agencies to accomplish energy, environmental, and land-use goals through improved transportation planning and implementation activities. To demonstrate the feasibility of the program concept, NAVFAC contracted with Stanford Research Institute (SRI) to: Identify the transportation problems in the extensive complex of Navy bases, shipyards, and air stations at several selected Navy installations in the United States;* and to develop an approach for demonstrating how a cooperative transportation program might be implemented in a specific military community (via the Tidewater area of Virginia).

This report presents the results of the second study effort. It first restates the reasons for Navy involvement in transportation studies, then presents the approach developed by the project team for establishing a cooperative transportation planning process, discusses the demonstration project in Tidewater, and concludes with a discussion of the positive aspects and recommended additions to this effort.

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*Bagley, Marilyn D. and Marc F. Roddin, "An Assessment of the Relevance of Transportation Research to Naval R&D" Contract No. N6601-74-C-0450 TAC, SRI, Menlo Park, California (December 1974).

II BACKGROUND

A. Transportation Problems in the Broad Perspective

The National Environmental Policy Act (NEPA) of 1969 requests federal agencies to cooperate in controlling pollution and requires them to assess the impacts of their proposed actions before initiation. Since the passage of NEPA, a number of federal agencies have issued both policies and standards for environmental protection. State and local agencies are also beginning to formulate major policies and controls directed toward improving the quality of life.

Similarly, the conservation of energy, particularly petroleum, has emerged as a dominant theme in both federal and state agency policies and directives. Transportation, particularly that associated with moving people in their daily activities, has a profound effect on each of the major concerns of federal, state, and local planning agencies. These major concerns are:

- Environmental protection--particularly effects on air quality and noise.
- Energy--particularly the large amount of energy consumed by the private automobile.
- Quality of life--as related to environmental amenities and opportunity for personal choice of movement through a community.
- Land use--particularly urban sprawl and comprehensive planning.

The ability to address the complex issues represented by the above concerns not only implies, but necessitates, the cooperation of all major institutions in any given geographic area. The premise of this study is that the Navy or any other major employer in a given community can comply both with federal and local regulations as well as with internal agency objectives by cooperatively addressing problems such as transportation. This approach not only can save time and money for participating agencies, but also can serve to establish a rapport among large institutions and the communities in which they reside.

B. DoD Interest in Transportation

The previous SRI study has adequately demonstrated that the Navy has the same concerns and associated transportation problems that civilian

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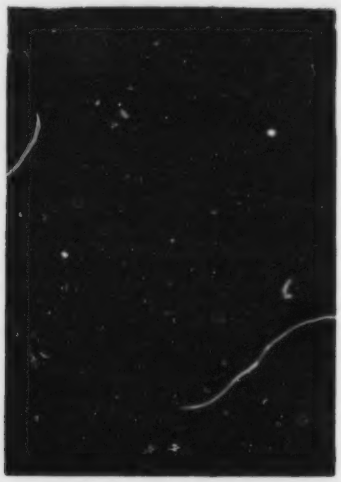
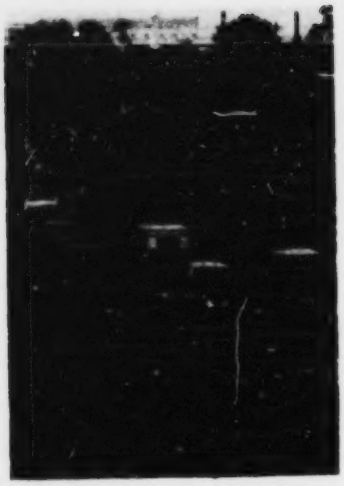
communities have.* Naval facilities in the Norfolk-Tidewater area in Virginia; those at Charleston, South Carolina; and at Puget Sound, Washington were selected as case study sites to survey and identify transportation problem areas. The following tabulation illustrates the range of transportation-related concerns and associated problem conditions at one site in the Tidewater case study--Sewells Point Naval Base in Norfolk, Virginia.

Concern	Condition
Environmental quality--particularly meeting standards (i.e., Clean Air Act) 	The Navy spends a considerable amount of money controlling stationary sources of air pollution (scrubbers on smoke stacks, and such) to meet ambient air quality standards, yet the automobile is by far the single largest contributor to air pollution.
Comprehensive planning and land use	Millions of dollars are allocated each year to maintain and improve roads and parking areas on Naval bases (over $2 million was budgeted at Sewells Point in FY 74-75). Acres of valuable land are used to accommodate automobiles (559 acres at Sewells Point are paved for auto use).

*Bagley and Rodden, Op. Cit.

Energy conservation



Each working day, 33,000 persons commute in 22,000 vehicles to Sewells Point Naval complex. In 16,500 of these vehicles the driver is the only passenger. Based on these figures, 44,000 gallons of gasoline are consumed daily; extended, this figure represents 11,440,000 gallons annually. Energy shortages and rising costs could severely impact Navy employees dependent on auto travel.

Quality of life

The advent of the all-volunteer forces has resulted in large expenditures by all the services to upgrade the amenities of military life. Yet, issues such as vandalism of private automobiles parked on base continue to be a problem.

The seriousness of the above concerns is reflected in a number of executive orders, DoD policies, and Navy instructions. Some typical orders directed to principal concerns are summarized below.

- Environmental Protection

  Executive Order 11514--Protection and Enhancement of Environmental Quality

  This order outlines the responsibilities of federal agencies regarding the cleanup and protection of the environment; these reponsibilities include monitoring, evaluating, and

controlling activities relevant to pollution, environmental enhancement, and other programs that affect the quality of the environment.

Executive Order 11752--Prevention, Control, and Abatement of Environmental Pollution at Federal Facilities

This order stipulates that federal facilities will comply with applicable standards set forth by the government and will work in cooperation with state and local governments in the prevention of environmental pollution.

OPNAVINST 6240.3D--Navy Environmental Protection Manual

This manual provides guidelines and specifies responsibilities to implement SECNAVINST 6240.6D for the administration of the Navy program for protection of the environment and conservation of natural resources.

- Energy Conservation

OPNAV Instruction 4100.5 (SECNAV 2817442)

This instruction provides: policy and procedural guidance in the implementation of energy conservation actions for ships, aircraft, and shore installations worldwide; and specific energy reduction goals--for example, "carpooling and use of mass transit systems will be encouraged, by preferential arrangements for car pools and personnel using mass transportation systems."

In summary, military bases do have transportation problems; they must also comply with federal, state, and local environmental and energy regulations and directives. To date, the Navy, like other military services, has attempted to solve these problems alone, within the limits of restrictive funding and implementation capabilities. Though joint community/federal agency problem solving is advocated, it is seldom practiced. Cooperative transportation problem solving offers an opportunity to demonstrate how military communities can interact with local civilian governments and could further serve as a case-in-point for how other Navy-Community problems, such as waste disposal and compatible land uses, could perhaps be approached.

C. Selection of a Demonstration Area

Following site visits during the initial feasibility study, Tidewater, Virginia was selected as the pilot area for the demonstration project. Norfolk, and in particular, Sewells Point, was clearly a candidate for two reasons: it had a multitude of transportation and institutional problems, and it had the expressed interest of the Commandant in placing a high priority on solving transportation problems. The Admiral and his

staff, along with the Atlantic Division Installation and Planning office had been actively seeking ways to alter the heavily auto-dependent Navy commute situation in the Fifth Naval District. Car pool programs had been initiated, traffic flow studies had been made, new bus routes were being tried, and informal contacts had been made with local transportation agencies. Though these efforts were a step in the right direction, they apparently were fragmented and needed a more comprehensive and systematic approach. Additionally, as pointed out earlier, the Navy contact with ongoing local transportation processes and federal funding programs was severely limited. Thus, the groundwork had been laid in Tidewater for the demonstration of a cooperative process, and the services offered through this project were timely and welcomed.

III DEVELOPMENT OF AN APPROACH FOR NAVY TRANSPORTATION INVOLVEMENT

Since one of the principal objectives of this study has been to provide insight on how a cooperative transportation program can be established in a military community, this section of the report discusses the key elements of the approach, apart from the Tidewater application. This format also will assist in providing a basis for the later discussion of transferability.

Three assumptions underlie the approach taken. The first assumption, that a third party facilitator could assist the Navy in initiating the demonstration program, came out of early concept formulation sessions with NAVFAC program managers. It was felt that a consultant could expedite the demonstration program by providing early on-site services in an uninterrupted concentrated level of effort, and making available knowledge of ongoing federal assistance and demonstration programs in transportation. As will be discussed later, another benefit of using an outside party was the access to local community information sources that may otherwise be inaccessible to military personnel.

The second assumption, the development of a cooperative transportation planning process, required a systematic interdisciplinary approach. Transportation expertise alone was not enough. The SRI team provided a wide range of disciplines, featuring a transportation planner, an environmental analyst, a land use economist, and a policy analyst. Each discipline provided a different insight to the major issues; more importantly, each provided information to the planning process on how to initiate actions in a systematic way.

The approach developed by the project team included the following major elements:

- Understanding the Navy-Community transportation problem
- Development of a cooperative transportation planning process
- Preparation of a Transportation Action Plan
- Implementation of the Action Program
- Technical assistance during implementation.

A discussion of each of these elements follows.

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A. Step One: Understanding the Navy-Community Transportation Problem

The first objective in any systematic problem-solving approach is to thoroughly understand the problem to be solved. One of the more successful methods of problem formulation used at SRI is for the interdisciplinary project team to hold full-day work sessions to define the problem in a concise, mutually understood way; define the objectives and criteria for evaluating alternative solutions; identify any constraints on potential solutions; and outline the full range of alternative solutions.

To assist in the problem formulation sessions, a special technique was used early in the project. The technique, coined 'generative graphics' by its founder, Joseph Brunon, a Media Specialist at the University of California-Los Angeles, aims at improving communication through the use of visual media. Generative graphics is an effective technique for group interaction because it elicits a working model of the problem and its environment from each of the team members. The visual media consists of colored felt-tipped markers on a large (8' x 10') area of white paper to make an on-the-spot recording of images of interactions during the session. The photographics shown in Figures 1-6 are from the working session.

Initially, the team addressed broad conceptual questions:

- Should the Navy be involved in transportation planning?
- What should the Navy do?
- What should be the process?

Reiterating supportive material from the previous SRI study of transportation needs and conditions at three Navy locations helped to generate answers to the first question. The second question surfaced the need for cooperative action between the Navy and the local community on issues such as transportation. The final question initiated the beginning of the process, or approach outline.

First, the team defined its own role and responsibilities in the project. The project team should:

- Consider the Navy as an integral part of the community.
- Consider the Navy as the proprietor of land, wherein a large number of people must move about.
- Consider the Navy's repsonsibilities to their employees, their families, and residents in the adjoining community.
- Develop means for decreasing the emphasis on single-occupancy automobile commute travel.
- Act as a catalyst to problem-solving processes.

FIGURE 1 GENERATIVE GRAPHICS: THE STARTING POINT

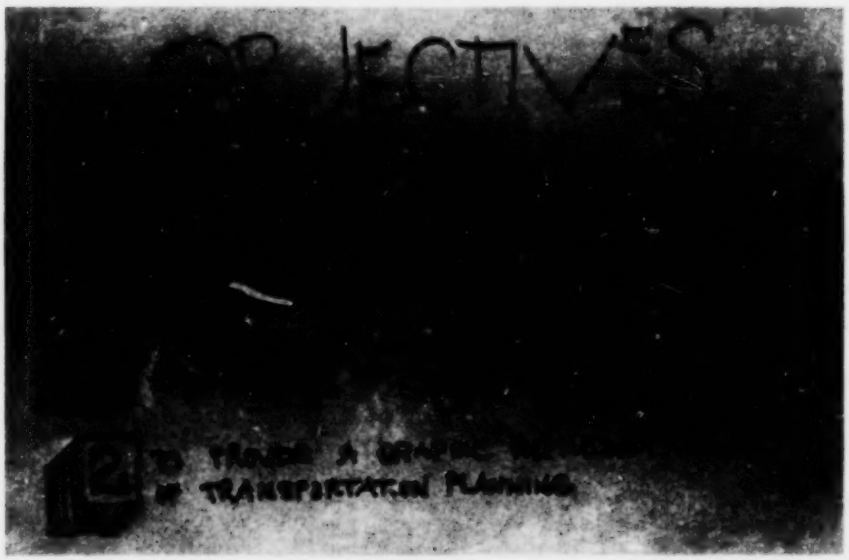


FIGURE 2 GENERATIVE GRAPHICS: STATEMENT OF OBJECTIVES

FIGURE 3 SRI PROJECT TEAM SUBMITTING PROBLEMS

FIGURE 4 CAPTURING CONCEPTS IN VISUAL IMAGERY

FIGURE 5 VIDEOTAPING THE WORKING SESSION

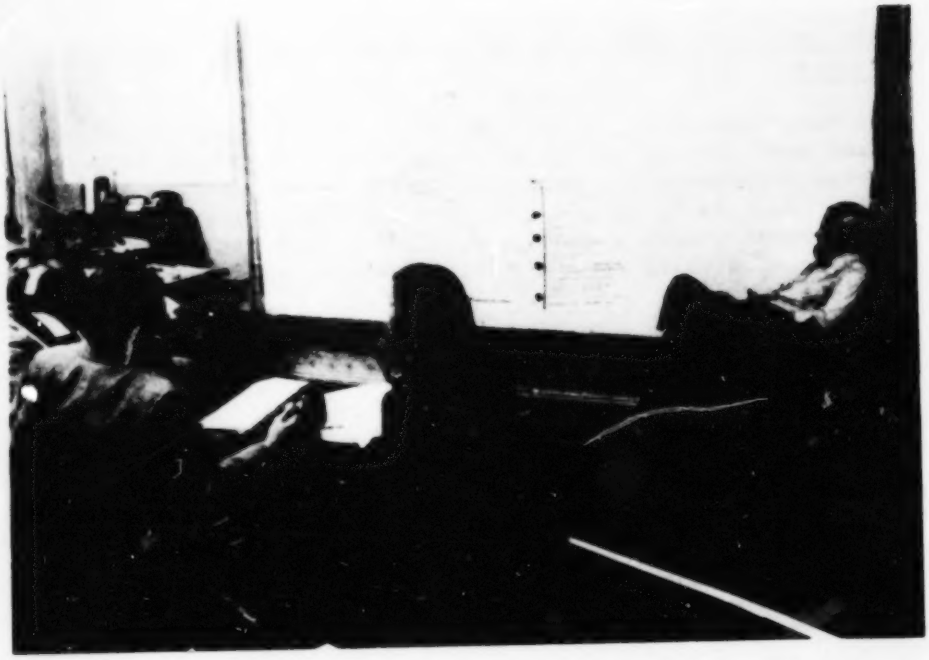


FIGURE 6 FURTHER DISCUSSION OF PROBLEM-SOLVING FORMULATIONS

Examples of the use of the graphics in problem solving are shown in Figures 7 and 8.

On the basis of the broad conceptual considerations and team responsibilities, listed above, the problem could be stated as:

> A NEED FOR THE NAVY TO FIND WAYS TO WORK COOPERATIVELY WITH FEDERAL AND LOCAL AGENCIES IN PROVIDING IMPROVED TRANSPORTATION OPTIONS TO NAVY-COMMUTERS.

The objective of the project thus was to coordinate the transportation needs of a Navy community with the transportation planning and operational activities of a civilian community, so as to develop an incremental action plan for improving passenger circulation and distribution options at the site. The process would serve to demonstrate how the Navy and other public agencies could unite to develop and implement a program specifically aimed at solving mutual transportation problems in military communities.

With both the broad and specific objectives of the project defined, the project team discussed detailed transportation needs of the Navy in the community and outlined problems of concern and criteria to be used to set priorities and evaluate alternative transportation actions. The graphics used for this working session are shown in Figures 9 and 10. These concerns and criteria are further portrayed in Table 1.

B. Step Two: Development of a Cooperative Transportation Planning Process

The Navy-Community transportation planning process developed from a recognized need to work within existing organizational structures and institutional arrangements. The organization of the process is depicted in Figure 11. It clearly outlines an internal Navy segment and an external community segment, with a linkage provided by a joint Navy-Community advisory committee, a third party facilitator--the SRI team--and a five-year action plan.

The procedure to develop the process is outlined below.

Identify and Contact Stakeholders--It is important to know all of the key actors and user groups in the area. It is also essential to understand the decision making process for long-range planning as well as implementation. The city or regional transportation planner can usually identify key stakeholders in a community, and the Commanding Officer or Commandant's staff can supply a list of key Navy officers. Once they are identified, the project team must contact each stakeholder to ensure that decision makers are informed of the study objectives and to define what their part in the study most likely will be. Also, it is important to document discussions with each individual contacted so that a record can be made both of reactions to the study and the sources for new ideas.

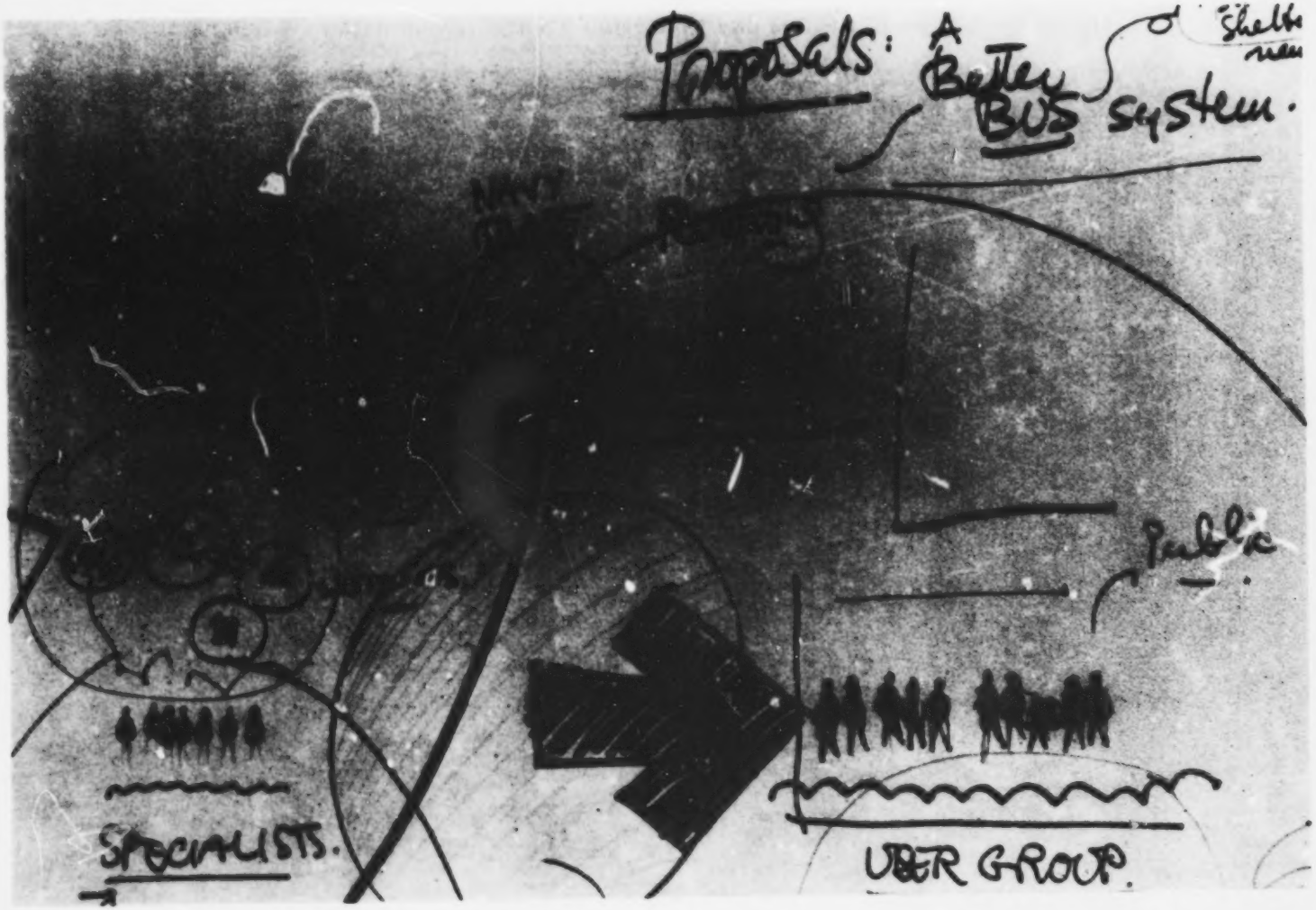


FIGURE 7 VISUALIZATION OF THE COOPERATIVE PROCESS

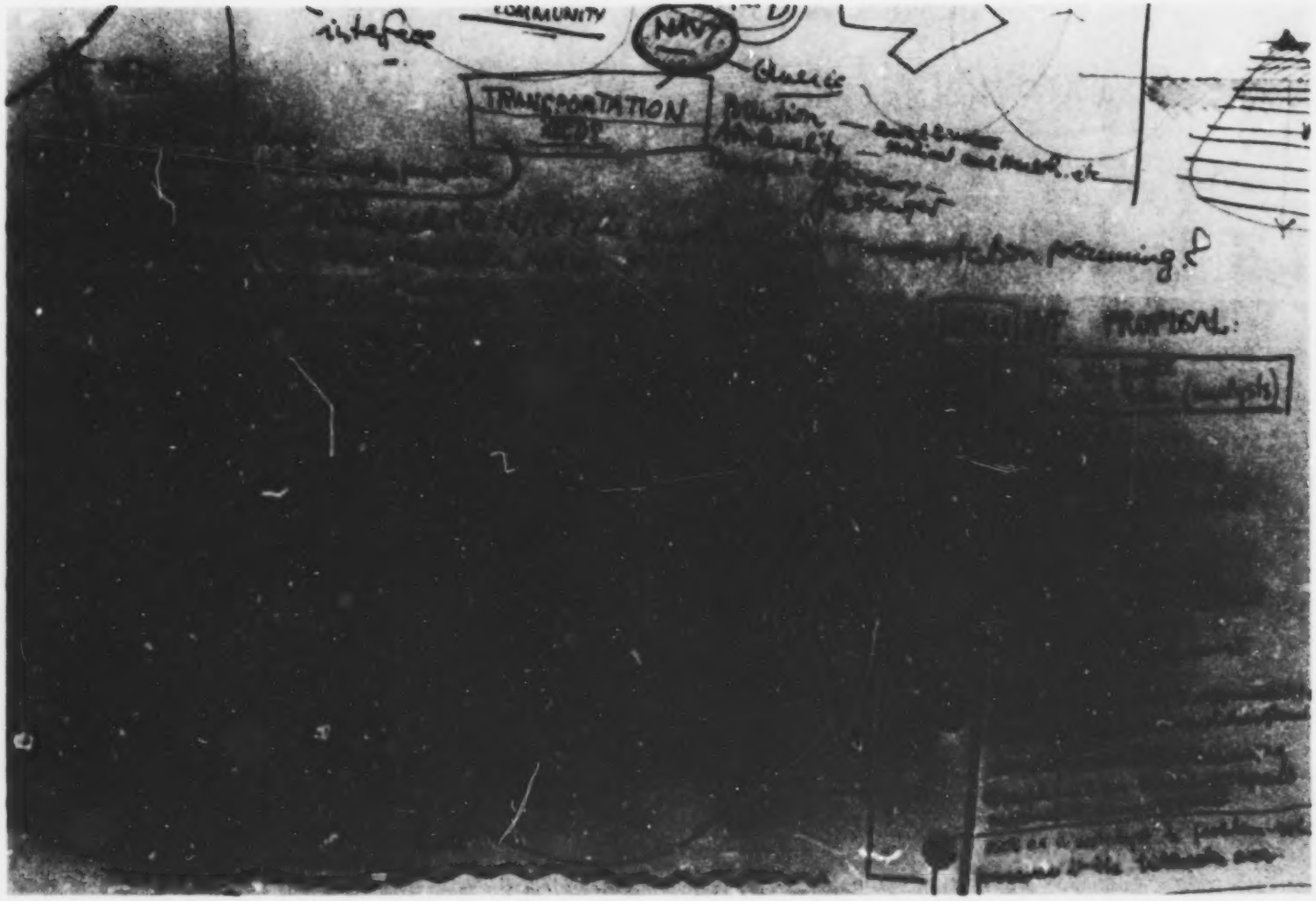


FIGURE 8 DETERMINING OVERALL OBJECTIVES AND PROJECT TEAM RESPONSIBILITIES

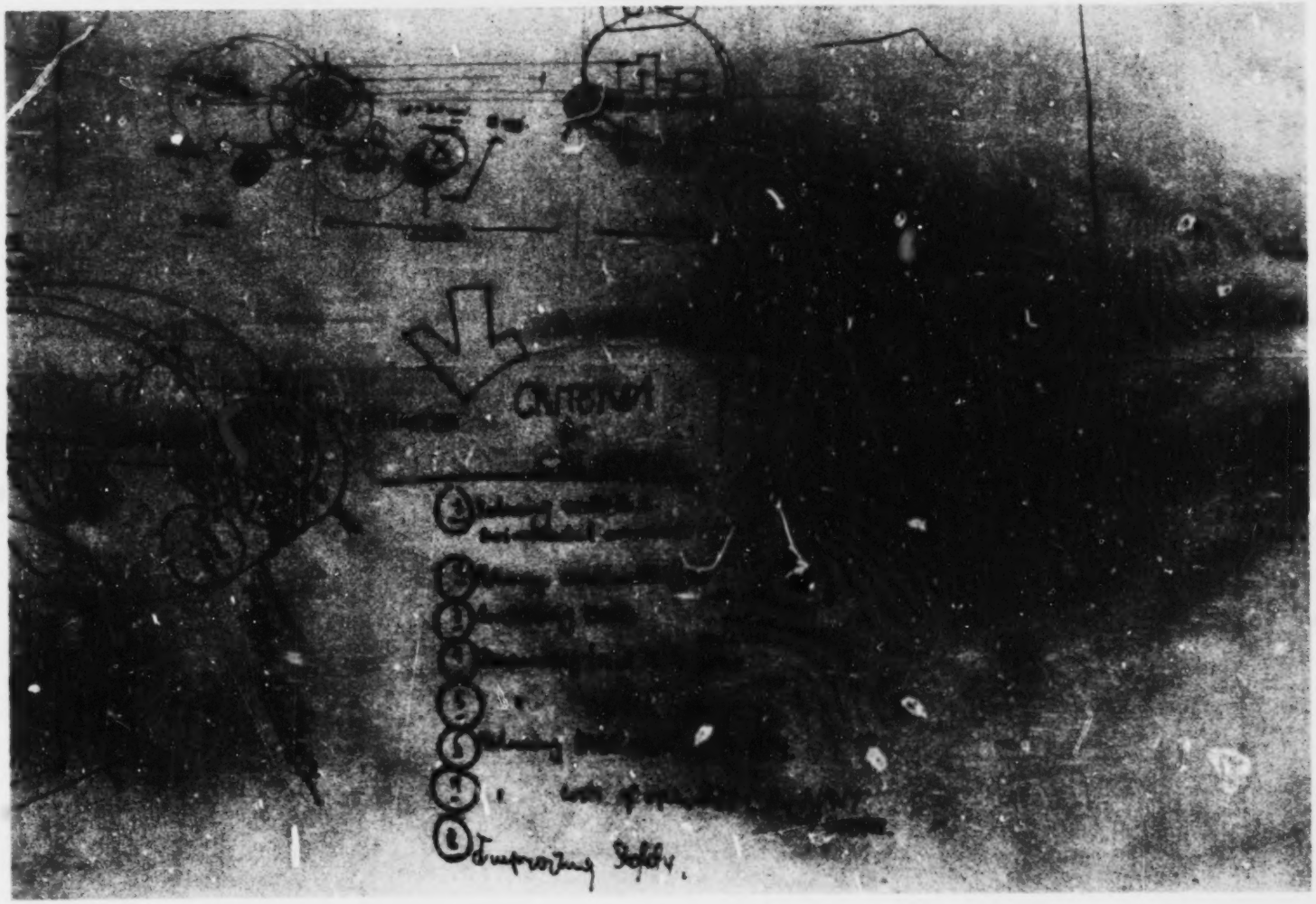


FIGURE 9 OUTLINING NAVY-COMMUNITY CONCERNS AND CRITERIA FOR EVALUATION

FIGURE 10 SETTING PRIORITIES FOR ACTION PLAN

Table 1

TRANSPORTATION ACTION CRITERIA

Areas of Concern	Evaluation Criteria
Air pollution	Reduced emissions (tons of pollutants)
Energy conservation	Gallons of fuel saved
Noise	Traffic noise measurements
Land use	Land area used for parking (improved flexibility from increased land available for choice)
Aesthetics	Natural vegetation, design composition, and such
Cost (to Navy, travelers, community)	Operating and capital cost
Accidents	Fatalities, injuries, property damage
Safety	Crime-related incidents
Vandalism	Number of vandalism incidents; Replacement cost
Travel time	Hours of travel time
Travel comfort	Crowding; Congestion
Convenience of travel	Personal choice (reading, smoking, walking, listening to music, and such); Flexibility
Service to persons of limited mobility (handicapped, poor, elderly, and such)	Number of people served

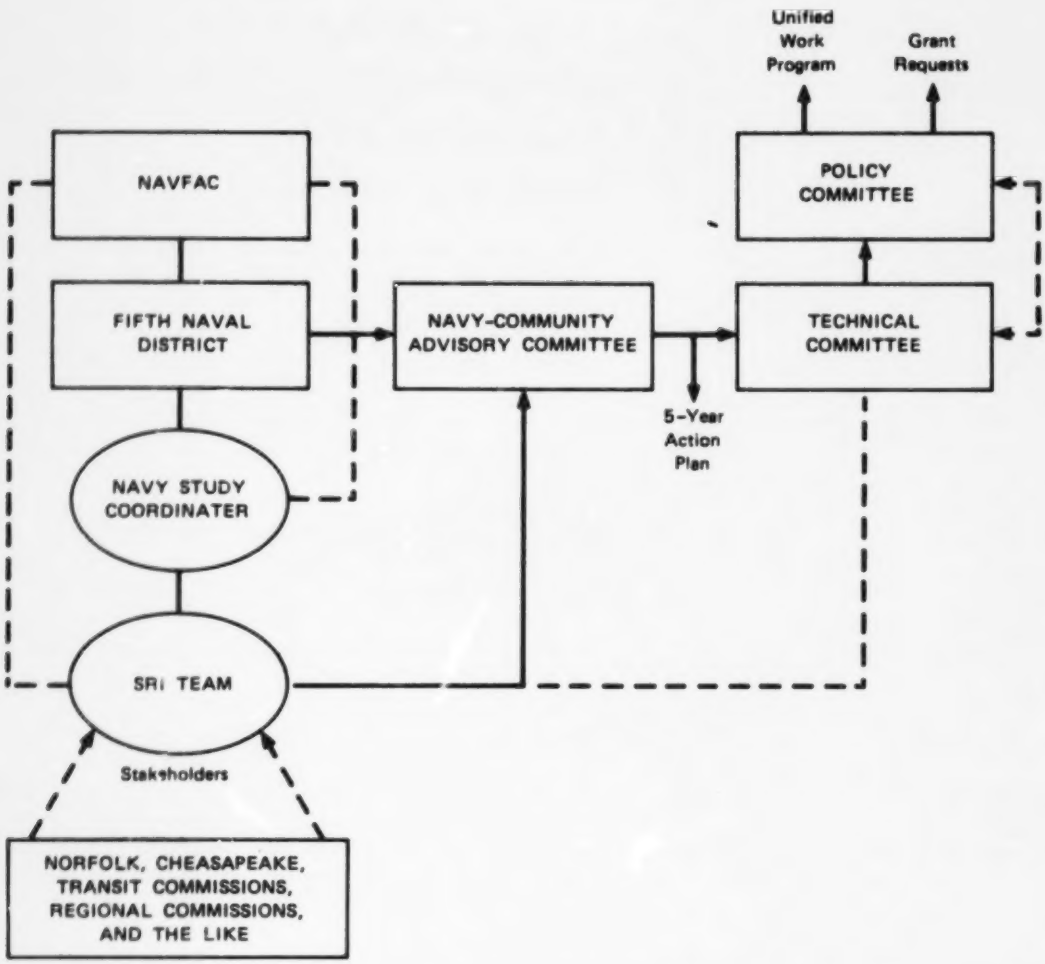


FIGURE 11 ORGANIZATION PROCESS

Collect and Analyze Existing Plans and Data--The contacts made in the first step of the process will help to provide necessary information concerning Navy-Community travel needs and ongoing transportation planning activities. Both short- and long-term plans should be determined.

Establish Advisory Committee Role--One objective of a cooperative program is to involve all major stakeholders from the onset of the project to ensure that the program satisfies mutual goals and will eventually be implemented. One method for doing this is to set up an advisory committee of major stakeholders and decision makers from both the Navy and the community. The advisory committee members are to serve as informal representatives of their respective organizations in providing: recommendations on the project scope, criteria for evaluation, advice and action recommendations, priority setting, and responsibility for two-way communication with their organizations to implement actions.

Maintain Frequent One-to-One Contact with Local Stakeholders--Information flow and protocol are essential whenever the actions of diverse single-purpose agencies must be coordinated systematically. Keeping decision makers and stakeholders informed of the study progress and inviting frequent input from them stimulates and keeps the program active. (See Appendix B for examples of correspondence in Tidewater.)

Inform Federal and State Officials on Major Steps and Related Decision-Making--A number of federal and state programs are both directly and indirectly concerned with transportation programs at the local community level. The project team must be cognizant of existing agency guidelines and regulations that would have an effect on transportation planning activities. Additionally, since federal and state programs are a major source of funding transportation activities, their objectives and requirements must be understood.

Early contact with federal and state officials, or program representatives, not only fosters understanding of their program objectives but also apprises them of the Navy program objectives. Benefits of this exchange of ideas are the enriched input and the maintenance of continuity. Another benefit is the opportunity to obtain federal input at an early stage so that potential demonstration proposals can reflect both agency objectives for particular problems that they are studying and local Navy-Community needs. A long-range benefit of federal coordination is the opportunity to build upon this type of military-community example of structuring an efficient process at the federal agency level for cooperative transportation programs.

C. Step Three: Development and Endorsement of the Transportation Action Plan

Implementing a Navy-Community transporation program requires the systematic coordination of a number of activities, ranging from surveys and data collection, through marketing programs, to the actual operation of vehicles. It was felt that a sequential scheduling, or mapping process would provide a tool for coordinating actions of the Navy and the community. A five-year action plan, with transportation actions covering a wide range of modes and activities, was proposed as the tool for this project. Example actions can be outlined by the study team and used to solicit further recommendations from the Navy and community stakeholders. Each action should be explained in sufficient detail to provide an understanding of the concept, but still allow for further input before implementation. Lead agencies and funding sources also should be outlined for each recommended action. The Action Plan should then be finalized through an iterative process that sets priorities and evaluates actions against established criteria.

D. Step Four: Integrating Action Plan into Navy and Community Program through Established Decision-Making Processes

Step one of the process provides insight to the existing transportation decision-making process for both the local community and the Navy bases. The Action Plan must now be formally introduced to the decision-making bodies for endorsement and incorporation into ongoing programs for implementation. Timing of this presentation is sometimes crucial to ensure coordination with funding sequences of public agencies.

E. Step Five: Technical Assistance to Implementing Agencies

The project team must continue to provide technical assistance to the program, so that agencies may obtain help in finalizing action descriptions for implementation. Additionally, overall coordination of the program is essential during the early stages so as to avoid fragmentation of the program. Information flow between agencies or stakeholders continues to be an important element.

As actions are initiated, a systematic monitoring program should be established to evaluate the success of various actions in relation to established criteria and objectives. The results of monitoring should be used to both refine the transportation actions and to make any necessary adjustments to the overall program (for example, the lack of ridership on new bus routes may be attributed to poor marketing). Reporting of the effectiveness of various action programs should be distributed periodically to stakeholders as part of an on-going information exchange.

This concludes the discussion of the approach. The next section of the report demonstrates how the approach was actually applied in the military community of Tidewater, Virginia.

IV THE TIDEWATER DEMONSTRATION PROGRAM

The approach described in Section III was developed for and applied in the Navy community of Tidewater, Virginia. Though some characteristics of the pilot study area are unique to this site, we anticipate that the many similarities may readily apply to other military (particularly Navy) communities.

A. The Tidewater Navy-Community Transportation Environment

The first tasks in Tidewater were to identify and contact the major transportation stakeholders and to collect and analyze the existing transportation plans and data. The following summarizes the results of that work.

1. Tidewater, Virginia

Tidewater, Virginia, refers to the metropolitan region comprising five separate, but unified, political jurisdictions: Norfolk, Virginia Beach, Portsmouth, Chesapeake, and Suffolk. Total population of the region is 1,050,000. The area is bounded on the west by Hampton Roads and on the north by Chesapeake Bay. Its center lies about 18 miles west of the Atlantic Ocean.

Comprehensive planning, particularly for transportation, is accomplished through the decision-making powers vested in the Southeastern Virginia Planning District Commission (SVPDC). The State of Virginia created the Tidewater Transportation District Commission (TTDC) in 1973 as the legal agency authorized to apply for and allocate state and federal transportation funds. The TTDC also is responsible for short-term transportation planning and the operation of transit services in the Tidewater area. Its immediate task, for example, is the consolidation of the bus systems into a $14 million regional network. All five political jurisdictions and a representative of the military installations in Tidewater participate in transportation planning through the Technical and Policy Committees of the region's Continuing Transportation Study. Regional transit planning is coordinated in a three-year Transit Improvement Program, a five-year Transit Development Program, and a fiscal year Unified Work Program.

2. The Navy in Tidewater

The Navy operates five major naval complexes in the Tidewater, Virginia region; these are:

- Sewells Point Naval Complex (northwest Norfolk).

- U.S. Naval Shipyard (Portsmouth).

- Little Creek Amphibious Base (northwest Virginia Beach).

- Oceana Naval Air Station (eastern Virginia Beach).

- Dam Neck Training and Amphibious Facility (southeast Virginia Beach).

Figure 12 shows the locations of and distances between these facilities. Sewells Point, employing 68% of the Navy personnel stationed in the area, is the major complex in the region and is situated eight miles from both the Naval Shipyard and the Little Creek Amphibious Base, and 18 miles from the Oceana/Dam Neck Complex.

The Navy employs one-third of the work force in the Norfolk Metropolitan Area. Many retired Naval personnel also live in the region. The Navy complex (Sewells Point), the Navy Shipyard (Portsmouth), the Amphibious Base (Little Creek), the Oceana Naval Air Station, and the Dam Neck facility, combined employ almost all of the 108,000 military and civilian Navy personnel in the Metropolitan Area. Table 2 summarizes Navy employment by base and by transportation modes for commuting Navy personnel.

Table 3 presents the adjusted results of the Navy's Share-A-Ride Survey of 1974. Based on the percentage of commuters responding at each base, survey results are scaled upward in an attempt to reflect actual conditions. The results are weighted toward responses of commuters who lived relatively further from their place of work and who were much more interested in buses and carpooling than were employees living closer in. Sewells Point origin-destination data collected by the Military Traffic Management Command, Transportation Engineering Agency show several slight discrepancies with the adjusted Navy Survey data. Nonetheless, the numbers presented in Table 3 are sufficiently accurate to correlate residential concentrations with different work zones, so as to indicate the volume of commute trips to be expected along certain corridors.

The SRI results shown in Table 3 differ slightly from Military Traffic Management Command, Transportation Engineering Agency data for Sewells Point because of the way the 15 Live Zones were defined. The Live Zones are self-explanatory except in the case of Virginia Beach, which was divided in the following manner:

> Virginia Beach (North)--the area in and around Diamond Lake Estates, Lynnhaven, Thoroughgood Estates, Lake Shores, Broad Bay and Fort Story.

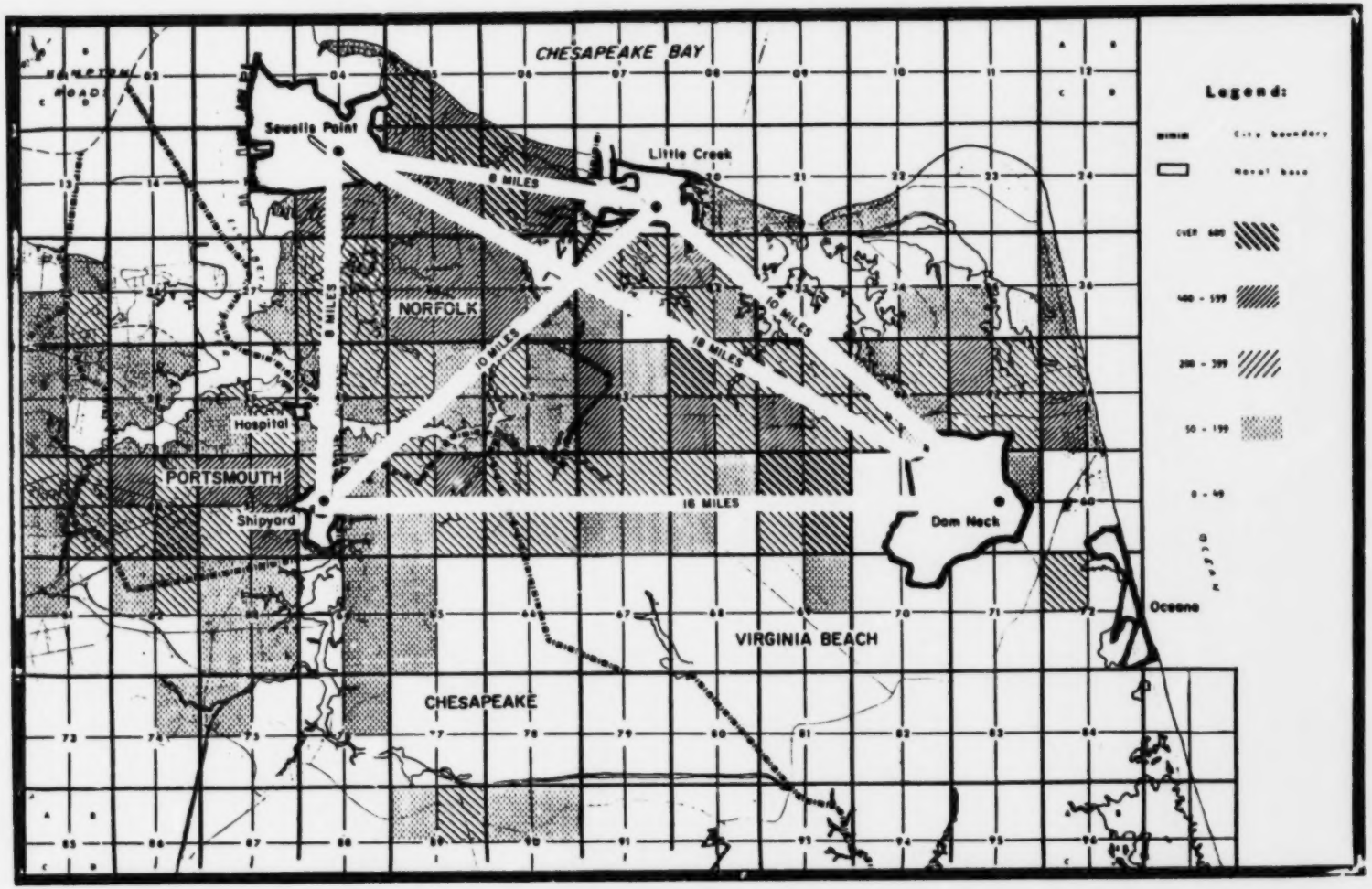


FIGURE 12 NAVAL FACILITIES IN TIDEWATER, VIRGINIA

Table 2

NAVY COMMUTER STATISTICS FOR TIDEWATER, VIRGINIA
(1 September 1974)

Base Complex	Number of Personnel Assigned	Transportation Modes		
		Commuters	Bus	Carpool
Sewells Point, Norfolk	73,769	42,548*	3,600	8,320
Amphibious Base, Little Creek	10,171	4,577	160	252
Norfolk Naval Shipyard, Portsmouth	10,488	10,388†	3,000	2,970
Oceana Naval Air Station	8,222	5,333	0	213
Dam Neck	2,962	1,909	0	625
Regional Medical Center, Portsmouth	2,452	2,000	50	107
TOTAL	108,064	66,755	6,810	12,487

*Includes all potential commuters. Daily commuters are dependent on the number of ships in port.

†Includes only those commuters assigned to shore activities located at the Norfolk Naval Shipyard; excludes commuters assigned to ships in overhaul, contract personnel--i.e., utilities, construction, delivery.

Table 3

ORIGIN-DESTINATION DATA FOR NAVY COMMUTERS
(Based on Navy Share-A-Ride Survey)

Live Zone	Work Zone: Sewells Point	Little Creek Amphibious Base	Oceana & Dam Neck	Naval Ship Yard (NYS)	Total
(1) Sewells Point	5,528	95	43	22	5,688
(2) North Norfolk	14,616	1,221	292	506	16,635
(3) South Norfolk	5,934	405	247	695	7,281
(4) Portsmouth	3,484	157	144	4,832	8,617
(5) Chesapeake	3,627	173	254	2,121	6,175
(6) Little Creek Amphibious Base	239	662	14	3	918
(7) North Va. Beach	2,004	580	191	141	2,916
(8) South Va. Beach	9,039	1,123	4,231	751	15,144
(9) Oceana & Dam Neck	248	31	2,031	17	2,327
(10) North Carolina	511	44	89	533	1,177
(11) Suffolk	477	37	20	372	906
(12) Hampton	195	6	5	47	253
(13) Newport News	132	7	6	53	199
(14) Williamsburgh & Yorktown	28	2	1	12	43
(15) Other	420	53	74	254	801
Percentage of Response	0.56%	0.81%	0.81%	0.76%	

Virginia Beach (South)--the area in and around and south of Pembroke, Kings Grant, Great Neck, Oceana Naval Air Station, Kempsville, and Princess Anne Plaza.

Sewells Point is the only Tidewater area Naval facility to have been the subject of an Army traffic engineering study in recent years; however, some limited travel information has become available for other Tidewater Navy bases. Information on mode choice and origin-destination patterns of Sewells Point commuters is relatively complete and up to date, but information on intrabase travel is lacking. The following paragraphs briefly describe travel information for each of the bases.

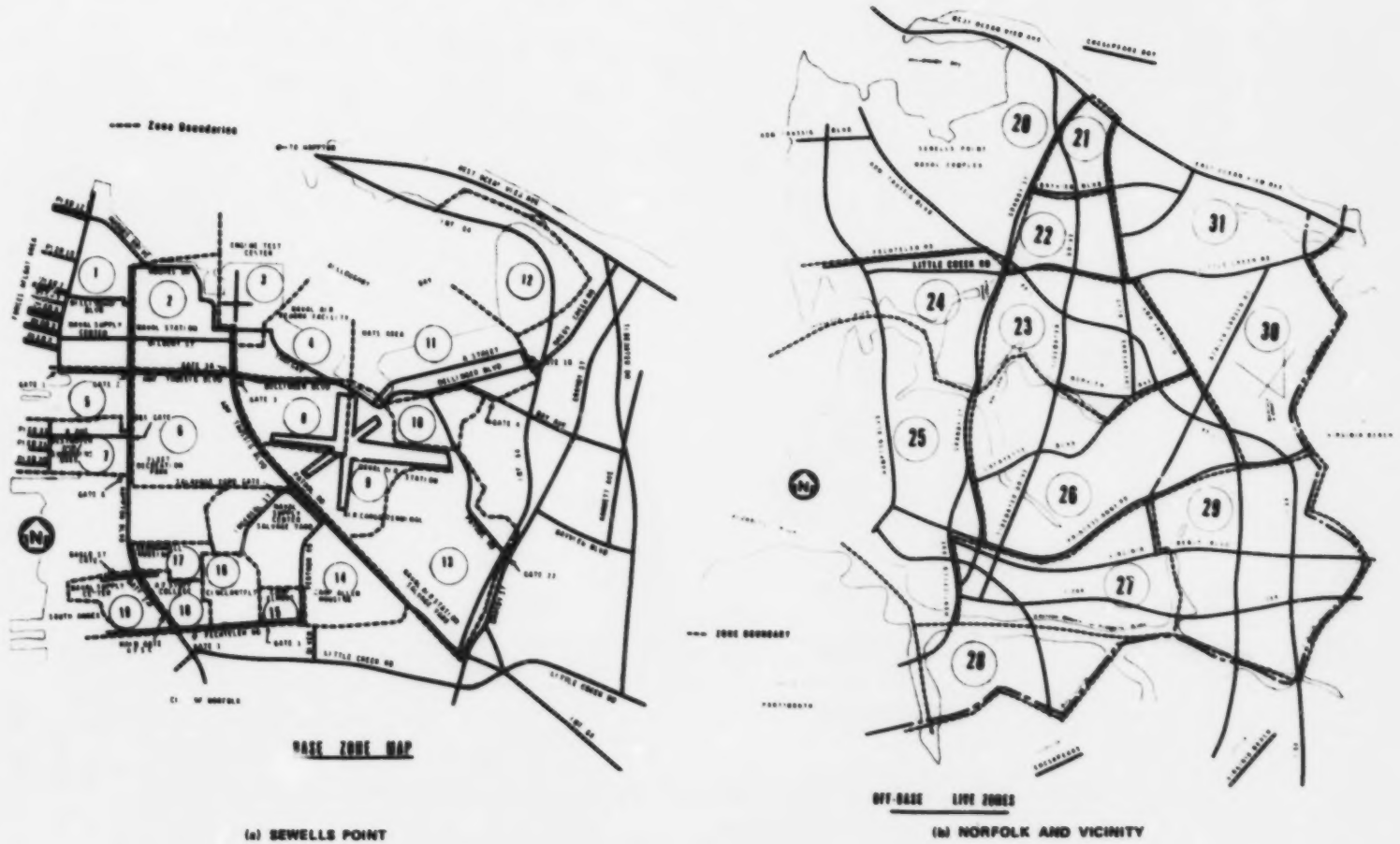
a. Sewells Point Naval Complex

In August 1973, the Military Traffic Management Command, Transportation Engineering Agency performed a planning study of the Sewells Point Naval Complex. At that time, the number of personnel assigned to the Sewells Point Naval Complex totaled 70,090 civilian and military personnel including 41,428 personnel assigned to ships. The number of ship personnel in port varies from day to day, so the study assumed that 50% of the ship personnel were in port at any one time. Using a 50% inport figure for personnel assigned to ships resulted in a total assigned personnel strength for this study of 49,376: 28,662 personnel permanently assigned to the base and 20,714 personnel aboard ship.

The same study also analyzed the home-to-work trips of the employees (see Figure 13). Over 11,500 personnel lived on-base; the major concentration was in the northwest corner of the base (Zone 2) where many personnel lived aboard ship. Other major on-base housing areas were Zone 7, the Destroyer and Submarine base, and Zone 2 where the dormitories were concentrated. Of the 37,865 personnel living off-base, 19,985 lived in Norfolk and 11,823 lived in Virginia Beach. The two Norfolk zones with the highest concentration of naval employees were Zones 20 and 31 in the northern part of the city.

The major work areas at Sewells Point are Zones 1 and 7, with high concentrations of ship personnel; Zone 4, the location of the Naval Air Rework Facility; Zone 16 where the Commander-in-Chief, Atlantic Fleet (CINCLANTFLT) is located; and Zone 2 where several major commands are located.

The Study found that over 79% of the employees at Sewells Point rely on the automobile or motorcycle to commute between their residences and work areas (Table 4) as drivers (32,949 persons) or as passengers (6,110 persons). This is an overall vehicle occupancy of 1.2 persons per vehicle that reflects the low vehicle occupancy observed at the gates during peak-travel periods. Over 8,100 personnel walk to their duty stations; of these, 6,300 are living and working on ships.



(a) SEWELLS POINT

(b) NORFOLK AND VICINITY

FIGURE 13 LIVE ZONES FOR SEWELLS POINT EMPLOYEES

Table 4

TRANSPORTATION MODE OF SEWELLS POINT EMPLOYEES BY PERSONEL CLASSIFICATION

Category	Drove Car	Motor-Cycle	Passenger Car Pool	Passenger Drop Off	Commer-cial Bus	Mili-tary Bus	Taxi	Walked	Bicycle	Total
Officer On-Base	183	1	22	4	0	2	0	302	20	534
Percentage	35%	0%	4%	1%	0%	0%	0%	56%	4%	
Officer Aboard Ship	20	0	0	0	0	0	0	159	0	179
Percentage	11%	0%	0%	0%	0%	0%	0%	89%	0%	
Enlisted On-Base	1,252	57	182	114	19	182	2	1,305	44	3,157
Percentage	40%	2%	6%	4%	0%	6%	0%	41%	1%	
Enlisted Aboard Ship	818	75	184	63	150	39	39	6,172	33	7,573
Percentage	12%	1%	2%	1%	2%	0%	0%	82%	0%	
Officer Off-Base	4,783	103	223	126	0	0	0	3	24	5,262
Percentage	91%	2%	4%	2%	0%	0%	0%	0%	1%	
Enlisted Off-Base	14,206	936	1,205	1,014	146	48	15	97	156	17,823
Percentage	80%	5%	7%	6%	1%	0%	0%	0%	1%	
Civilian	10,465	50	2,311	[illegible]	1,256	8	0	84	12	14,848
Percentage	71%	0%	16%	4%	8%	0%	0%	1%	0%	
Total	31,727	1,222	4,127	1,983	1,571	279	56	8,122	289	49,376

Commercial buses transported 1,571 persons; military buses, 279. Currently, three Tidewater Metro Transit routes serve Sewells Point. These are:

Route 2: Naval Base

Route 3: Chesapeake-Mason Creek

Route 35: Naval Base Express

Figure 14 shows the Tidewater Metro Transit bus service that is available and Figures 15 and 16 demonstrate the variety (and age) of other vans and buses offered as transportation. In Figure 17, we see the inadequacy of the bus depot facilities at the base.

The major off-base concentrations of single passenger automobiles are the 15,771 vehicle trips originating in Norfolk and the 10,471 trips originating in Virginia Beach. Personnel totals from these two cities result in an average 1.3 and 1.1 persons per vehicle from Norfolk and Virginia Beach.

The data in Figures 18 and 19 show the relative importance of each zone as a generator of work trips to Sewells Point. In Figure 7, the number shown for each zone indicates the percentage of people now driving their cars to work by zone. In the case of Sewells Point, it should be noted that many people who live and work on the base also drive their cars to work. Also Figure 19 data indicate that as one moves outward from Sewells Point toward North and South Virginia Beach, a progressively higher number of commuters use their own cars to make the trip to work (87% and 89% as opposed to approximately 75% each in Norfolk, Portsmouth, and Chesapeake).

b. Naval Shipyard

The Naval Shipyard in Portsmouth currently employs 10,488 personnel. Of these, 10,388 commute to work in 7,475 vehicles, of which 87 are buses and the remainder are cars. In 1968, vehicular access to the Shipyard was considered adequate according to the Preliminary Master Plan. It suggested improving road capacity and parking. Traffic problems were not foreseen, and improvement in public transportation or providing on-base service was not mentioned.

c. Amphibious Base, Little Creek

This facility is located on Chesapeake Bay in northwest Virginia Beach. It has 10,171 assigned personnel, approximately half of whom live on the base and 4,577 commute to work. Cars bringing personnel aboard for work have a vehicle occupancy ratio of 1.36.

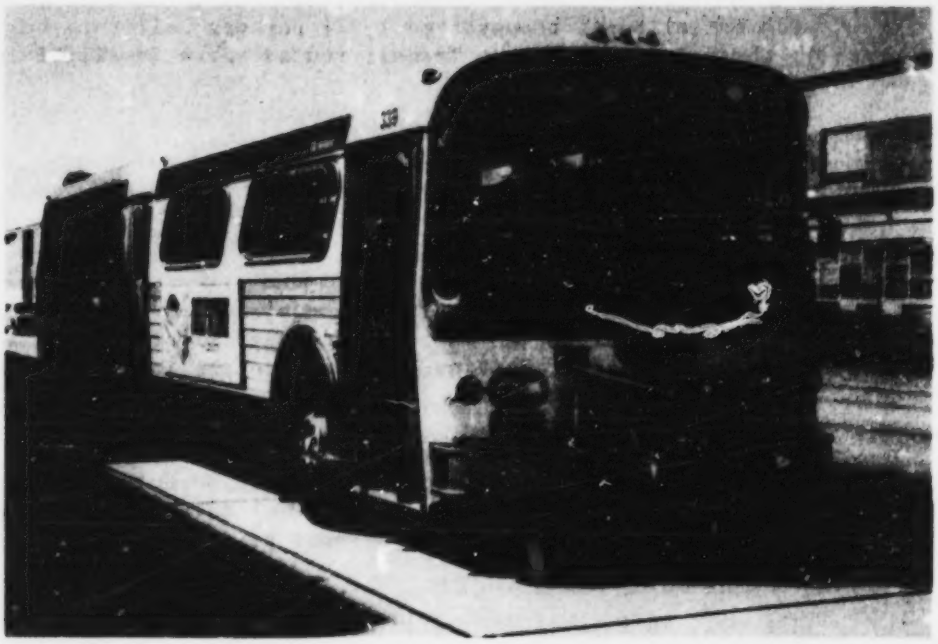


FIGURE 14 PHOTOGRAPH OF TIDEWATER METRO TRANSIT

FIGURE 15 PARATRANSIT AND OTHER NAVY MODES OF TRANSPORTATION

FIGURE 16 PHOTOGRAPH OF A PRIVATELY OWNED COMMUTE BUS

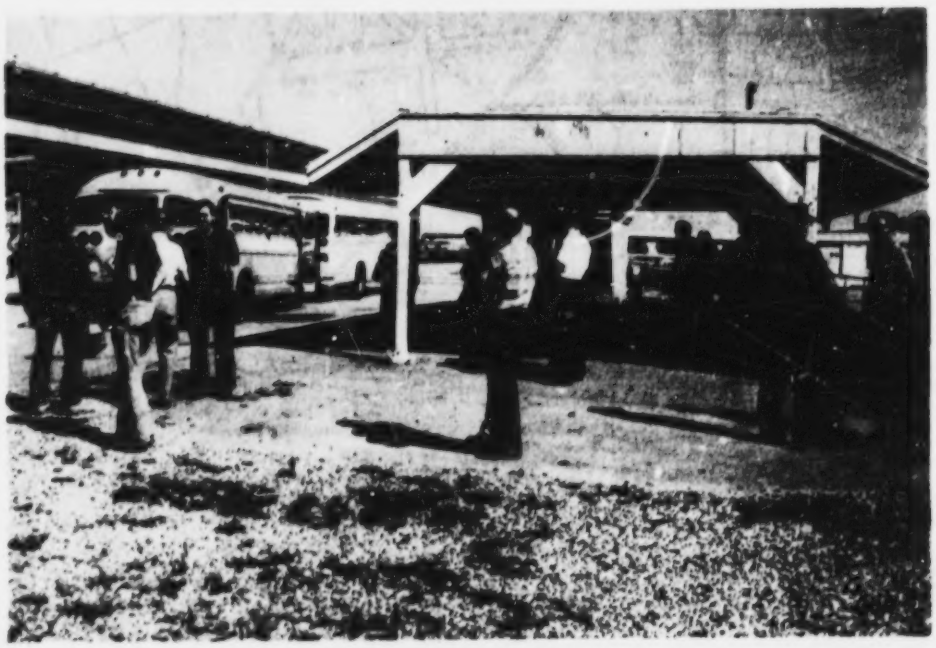
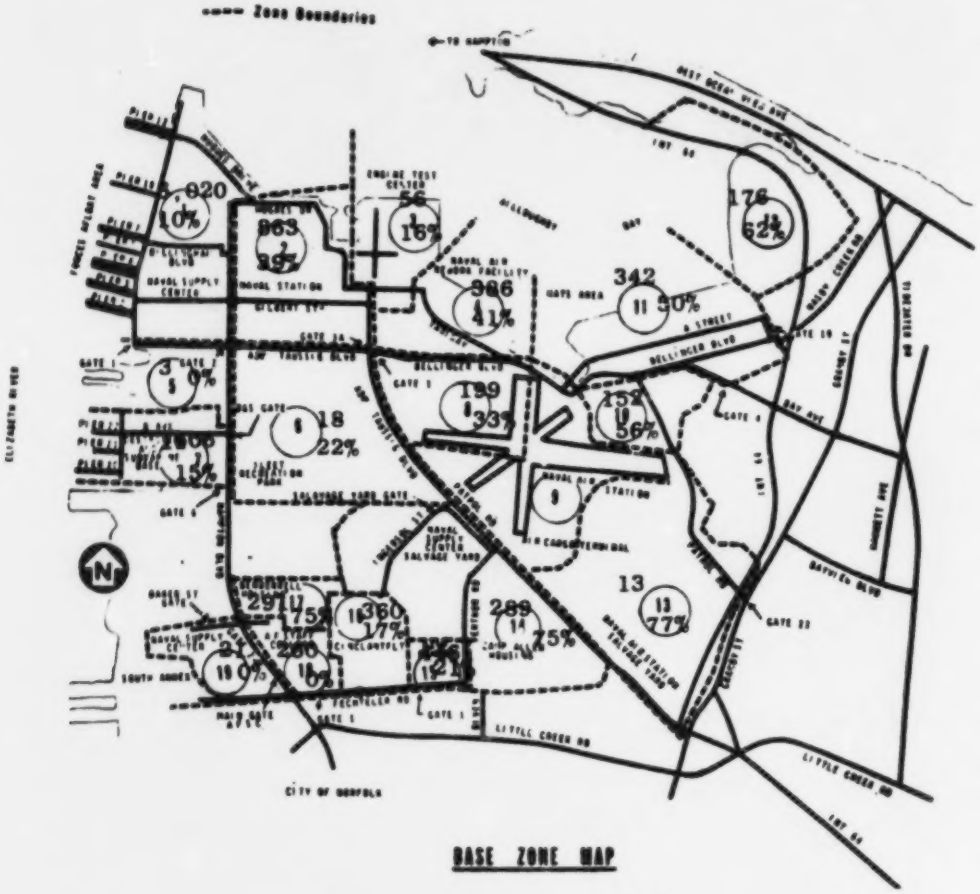


FIGURE 17 NAVY BUS DEPOT



BASE ZONE MAP

FIGURE 18 BASE ZONE MAP

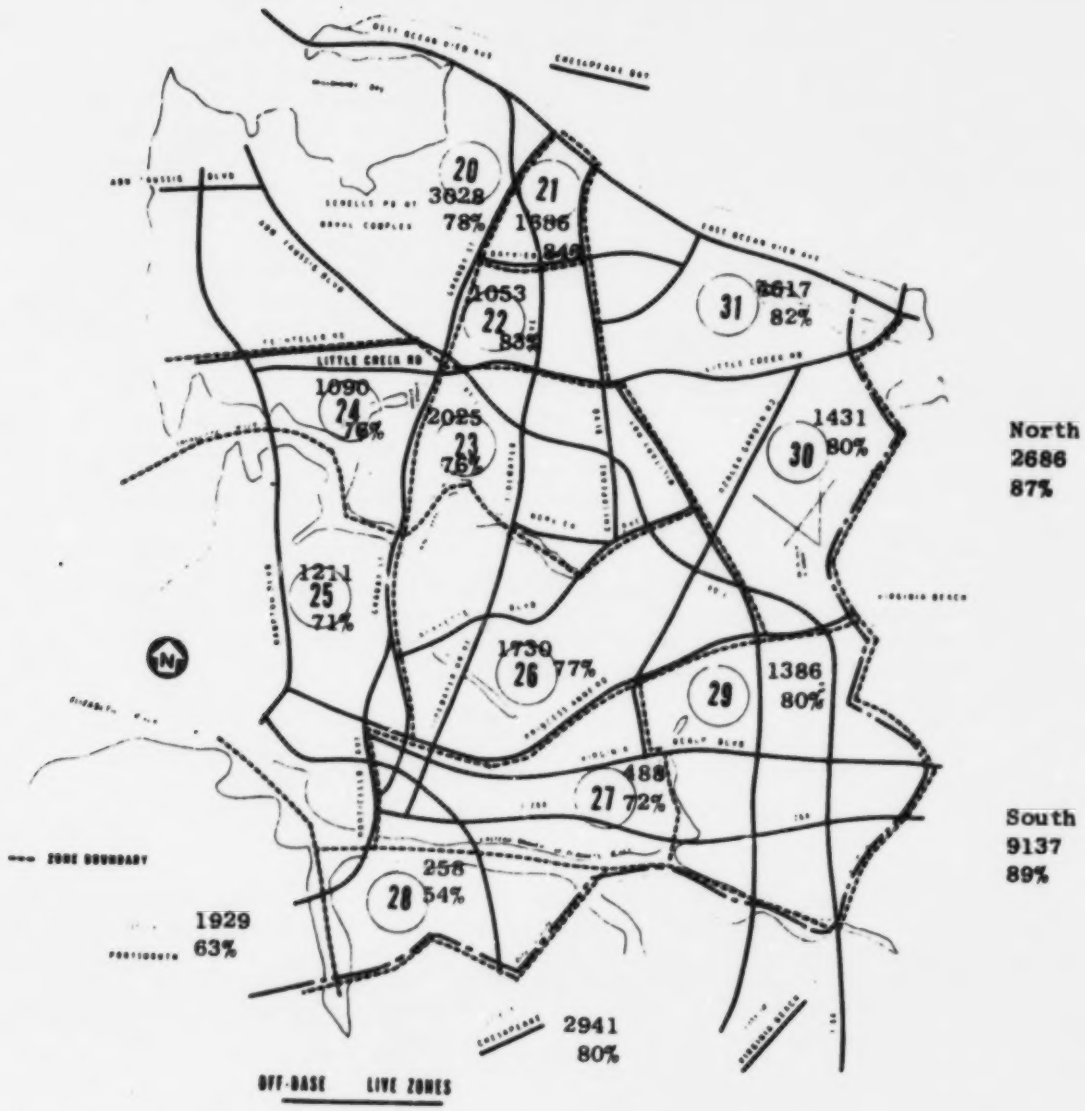


FIGURE 19 OFF-BASE LIVE ZONES

d. Oceana and Dam Neck

The proximity of these two stations permits joint use of various facilities, such as the Oceana Commissary that serves active and retired military personnel residing in the Virginia Beach area, the Oceana Dispensary for dependents of Dam Neck/Fort Storey personnel and for military retirees and their dependents in the area, and the Oceana Industrial Relations Department serving Oceana and Dam Neck.

A Preliminary Master Plan for the Naval Air Station Oceana and the Fleet Anti-Air Warfare Training Center Dam Neck was developed in close conjunction with representatives of the two activities, and the results presented in June 1968 are summarized below. It was designed to cover an eight-year period extending through 1976. As of 1974, Oceana and Dam Neck had 11,184 personnel assigned to their combined operations.

Oceana Naval Air Station (NAS)--The Naval Air Station-Oceana is located in Virginia Beach, 15 miles southeast of downtown Norfolk. In 1974, base employment had reached 8,222. Vehicular access to NAS Oceana is limited to two routes. Approximately 66% of the total daily Station traffic pass through the Main Gate from Oceana Boulevard (Va. Route 615, a two-lane road extending north-south along the east station boundary), while about 34% of the total daily traffic enter via the secondary gate located at the southwest extremity of the Station. During the peak hours, traffic is distributed equally between the two gates. The average number of occupants per car is 1.2; bus service is extremely limited.

The two main vehicular arteries on-Station are Princess Anne Road and London Bridge Road. Insufficient parking areas, particularly in the vicinity of the hangar and industrial area and the Navy Exchange, cause a traffic congestion problem.

Dam Neck Fleet Anti-Air Warfare Training Center--The Dam Neck Naval facility is located in close proximity to the Oceana Naval Air Station (about 3.5 miles away by road). In 1974, 2,962 personnel were assigned to the base.

In the 1968 Preliminary Master Plan, neither bus service on the facility nor outside bus service to serve the base were considered. Circulation on the base and transportation to the base appear to be dominated by the private automobile. The staggered working hours of the three major activites at Dam Neck allow a fairly continuous flow of on-Station traffic during peak periods.

B. Establishing the Cooperative Process with the Tidewater Community

Essentially two active forces played a role in establishing the cooperative transportation process in the Tidewater demonstration. One was the SRI project team serving as a third-party facilitator, and the

other was the Study Advisory Committee providing guidance during the development of the demonstration program and setting the stage for the ongoing cooperative process.

1. The SRI Project Team Role

The project team's primary role was to initiate and coordinate the process during the demonstration phase of the project; the objective was to establish an ongoing process that would continue after completion of the demonstration project.

The project team, representing the Navy, first met with each of the individual stakeholders in Tidewater to brief them on the project and to encourage their active participation. (A complete list of contacts appears in Appendix A). The contacts made during the initial visits provided the information for tracing the institutional linkages and decision-making for transportation in the Tidewater Region. This effort took approximately two weeks of on-site work by the four professional team members. Individual contact with each of the major stakeholders not only provided insight to the decision-making process in Tidewater, but also uncovered some of the conflicts that have occurred over transportation issues in the region. Meetings were documented on a standard SRI contact report form that was distributed to each team member. Contact reports were filed for each agency and referred to throughout the study.

The major stakeholders in the Tidewater Community, as identified in the above section, were as follows.

- For the Navy--The Commandant of the Fifth Naval District and his staff--The Atlantic Division Planning and Installation Office--The Commanding Officers of each of the five Navy complexes in Tidewater--The Public Works Office of each base.

- For the Tidewater Community--The Southeastern Virginia Planning District Commission--The Tidewater Transportation District Commission--The planning and city managers offices of each of the Tidewater cities (Norfolk, Chesapeake, Portsmouth, Virginia Beach, Suffolk)--The Peninsula Planning District Commission--The Peninsula Transportation Commission.

Together, the above represented the majority of transportation users and implementation agencies in the Tidewater region.

With the input from each stakeholder, the project team defined the interactive process to include: development of the problem statement and preliminary criteria, establishment of the study advisory committee, formulation of a tool for action--the Action Plan, and an outline of the steps for implementing the Action Plan. The problem statement and criteria were discussed in Section III-A of this report.

An additional service of the project team was to bring knowledge of ongoing federal and state transportation programs into the Tidewater community (for example, Urban Mass Transit Administration interest in paratransit), and to ensure that federal and state agency program officers were informed of the study progress in Tidewater. The communication link established by this procedure allowed for early feedback on possible funding from outside sources.

A final responsibility of the project team was to provide technical assistance to both the Navy and community in developing transportation actions. Information from successful demonstration projects tried in other communities and operational guidelines were provided continually during the project.

2. The Study Advisory Committee

With the direction and support of the Commandant and his staff, the project team organized a study advisory committee composed of representatives of the above-mentioned regional agencies and Navy organizations to provide guidance during the development of the demonstration program and to set the stage for the cooperative process. One person was chosen as the stakeholder to represent the five cities, and each stakeholder was entitled to one representative. (Names of Study Advisory Committee members appear in the Acknowledgement section of this report.)

During the initial meetings with the advisory committee, participants were encouraged to openly discuss the goals and objectives for this project from the perspective of their respective oganization. A videotape of the problem formulation session held by the project team at SRI was reviewed at one meeting to provide the format for further discussion on the objective of a joint Navy-Community Transportation Program and the criteria that would be used to establish priorities and to evaluate transportation actions over the coming years.

Advisory committee members for the Tidewater demonstration project concluded that energy conservation would be the foremost criterion for evaluating potential transportation actions. Those actions that could immediately reduce the total number of vehicles entering Navy property would receive first priority. Other criteria, such as cost, environmental protection (air and noise pollution), safety, and travel time also would be used to determine priorities among actions. The Advisory Committee was asked to complete a questionnaire designed to prioritize actions and eliminate those that were considered undesirable. The project team used the results to develop the second action plan outline to present to stakeholders in the community.

The preliminary list of actions developed by the SRI team was discussed with the Advisory Committee to begin identification of potential funding sources and lead agencies for action and to begin modification of the initial shopping list into a workable plan.

The final action plan, discussed in the following section of this report, was later presented to the Advisory Committee for their unofficial endorsement before official presentation to the decision-making bodies in the Tidewater community. In addition, each Advisory Committee member helped to keep his respective agency informed of the study progress and served as a point of contact for the study team (see Appendix B).

3. The Continuing Transportation Planning Process

Though the SRI project team and Study Advisory Committee provided the impetus needed to initiate the cooperative process, the realization of an ongoing Navy-Community Transportation Program depends on its actual incorporation into existing and future funded programs. For the Navy, this meant allocation of assignments for staff members in key programs (e.g., Public Works, Public Relations, Installation Planning, Energy Conservation) in addition to a key point of contact on the Fifth Naval District staff to serve as liaison and facilitator for an ongoing transportation program after the SRI team left Tidewater.

For the Tidewater community, the realization of an ongoing Navy-Community transportation program meant official endorsement of the action program and incorporation of community-sponsored actions into existing budgeted programs (for example, The Unified Work Program for transportation activities in the region as required by the Department of Transportation) for federal funding. A further requirement for continued transportation planning action is to have a Navy representative (for example, the Commandant or one of his designated staff members) participate on official planning committees for the Navy community (for example, the Technical Committee of the Continuing Transportation Study for the Southeastern Virginia Planning District and the Tidewater Transportation District Commission).

C. The Navy Area-Wide Transportation Action Program for the Tidewater Community

1. Summary of the Action Plan

The Action Program or Action Plan identifies passenger transportation options to be implemented over a five-year period by the Navy, by public transportation agencies in the Tidewater region, and by a combination of the two. Several program actions outlined by the project team members during the working session at SRI (described in Section III) were used to solicit further ideas from representatives of both Navy and community stakeholder groups in Tidewater.

The Action Plan presents transportation recommendations in three implementation phases: short-term (immediate implementation), mid-term (one-to three-year implementation), and long-term (three-to five-year implementation). The project team used the ideas internally generated and resulting from discussions with key stakeholders, along with the criteria

generated in the working session and endorsed by the Study Advisory Committee, to develop a comprehensive list of actions covering all travel modes and supportive activities. The initial shopping list of actions was later modified by the Advisory Committee to better reflect study objectives and criteria. A summary of the recommended actions is presented in Table 5 and a complete description is provided as Appendix A of this report.

Table 5

TRANSPORTATION ACTION PROGRAM:
SUMMARY OF RECOMMENDATIONS

Transportation Mode	Recommended Action
Automobile	Survey of on-base travel Carpool program Park and ride lots Auto disincentives
Paratransit	Taxi service marketing Fixed route taxi service Leased vans Private haulers association Auto rapid transit
Buses	Public buses routing, amenities, Navy buses marketing, incentives
Water Transportation	Passenger ferry service-feasibility study
Other Transportation	Bicycles and motorbikes on-base Automated guideway transit- feasibility study
Nontransit	Flexible work hours Navy family housing Trans-Hampton Roads Crossing study Transit Information Center Transit Marketing Program Navy transportation task and function

2. Summary of Implementation Steps, Funding Levels and Funding Sources

Table 6

NAVY-COMMUNITY AREA-WIDE TRANSPORTATION ACTION
IMPLEMENTATION REQUIREMENTS

Recommended Actions	Lead Agency	Implementation Steps	Timing	Cost
Survey of on-base auto travel	Navy	Navy 1. Design and administer survey questionnaires 2. Analyze data and identify potential improvements for non-auto transit	Immediate (within first year)	$5,000 (one-two man-months, plus materials)
Carpool program	Navy/ SVPDC	Navy 1. Assig[illegible]rogram responsibility to st[illegible] person 2. Combine user information with on-base survey 3. Public forum and awareness program 4. Administer carpool matching program SVPDC 5. Provide program/computer and staff assistance in designing program	Immediate	Navy: $20,000 or 4 man-months SVPCD:* $2,600
Park & ride lots	Navy & SVPDC	Identify new P&R areas within community	Immediate	Minimal
Auto disincentives	Navy	Navy 1. Develop long-range strategy in conjunction with transit improvements 2. Enforce preferential parking for carpoolers and compacts 3. Minimize additional parking spaces 4. Sticker fee for single passenger car 5. Parking fee; reduced fee for carpools TTDC 6. Provide recommended transit service improvements in conjunction with disincentives	Immediately: 1,2,3,5; 4 and 6 when transit service is available	1: 3 man-months 2: 3 man-months 3: $255 per parking space savings 4,5: Revenues 6: See action item 14 Federally sponsored evaluation: $50,000 1 yr--using urban diffusion model
Feasibility for auto-share concept on-base	Navy/w Consultant	Navy 1. Provide information to interested sponsors of study	Midterm	Six-month feasibility study

Table 6

E TRANSPORTATION ACTION PLAN
ION REQUIREMENTS

g	Cost	Source of Funds	Comments
e ar)	$5,000 (one-two man-months, plus materials)	Navy	Critical to design on-base transit improvements ranging from carpooling to designing on-base circulation and distribution system
e	Navy: $20,000 or 4 man-months SVPCD:* $2,600	Navy SVPDC	*The carpool matching program is Task No. 404-14.3 in the Unified Work Program for FY 75-76
e	Minimal	None identified	Community to be approached by SVPDC & Navy to negotiate agreement on use of lost. Unified W.P. #404-14.1
ly: s e	1: 3 man-months 2: 3 man-months 3: $255 per parking space savings 4,5: Revenues 6: See action item 14	1: Navy 2: Navy 3: NA 4,5: NA 6: See #14	Auto disincentives need to be linked to transit improvements. Limited access points on Navy bases provide ideal opportunity for monitoring disincentive effects on transit ridership, energy use, and emissions
	Federally sponsored evaluation: $50,000 1 yr--using urban diffusion model	Evaluation FEA, EPA, DOT	Unified Work Program #404-11.1
	Six-month feasibility study	Any interested sponsor; e.g., Electric Vehicle Council, FEA, DOT, EPA, etc.	This action, while recommended, requires no community or Navy action other than announcing availability of Navy bases for a feasibility study

Table 6 (Continued)

Recommended Actions	Lead Agency	Implementation Steps	Timing	Cost
Taxi service marketing program (on-base)	Navy	Navy 1. Public Affairs Office to implement program	Immediate (short-term)	$1,000
Fixed route taxi service	Apollo Cab Co. and Navy Exchange	Apollo 1. Apollo to design service and establish fare structure Navy 2. Modifications of Navy contract with cab company to permit fixed route service 3. Coordinate routes with on-base bus service 4. Navy publicize service	After on-base survey is completed and concept is judged feasible	Cost is borne by taxi service; minimal advertising costs
Leased vans	TTDC/ Navy Exchange	TTDC 1. Coordinate with Navy in establishing operational responsibilities 2. Prepare and submit grant application 3. Implement system through Navy Exchange Navy 1. Navy provides names, screens applicants and assists in finding riders 2. Coordinates with carpooling program 3. Navy Exchange administers program and establishes service capability	Immediate - submittal of grant request	$430,300 (100% Demonstration Grant)
Remove waiting restrictions at shipyard	Navy	Navy 1. Issue directive to change waiting time policy	Immediate	0
Develop and form private hauler association	TTDC	TTDC 1. Prepare and submit grant application 2. Establish staff position for Phase I feasibility study 3. Phase II facilitation of private haulers to form organization with appropriate functions and legal basis 4. Provide office space--support services 5. Coordinate association market areas with TTDC services Navy 1. Provide for close-in parking/ shelters 2. Distribute market information and promote private hauler service	Immediate - submittal of grant request	$50,000

ble 6 (Continued)

iming	Cost	Source of Funds	Comments
diate rt-term)	$1,000	Navy	Low-cost action to reduce use of personal vehicles for on-base travel and optimize contracted taxi service
r on- survey ompleted concept udged ible	Cost is borne by taxi service; minimal advertising costs	Taxi riders	A unique paratransit concept; however, needs to be carefully implemented
diate - itta! rant est	$430,300 (100% Demonstration Grant)	DOT-UMTA Demonstration program	UMTA has indicated interest in funding a van demonstration. Program also would expand modal diversity in TTDC operations. If successful, it could be expanded to other Navy bases and other major employers in the Tidewater area. Unified Work Program 404-14.7
diate	0	NA	Navy also can allow flexibility in private hauler working hours; preferential parking for drivers; bus shelters
diate - ittal rant est	$50,000	UMTA Demonstration Program	UMTA has indicated interest in supporting this action. Regulatory issues and a sensitive organizational process is necessary to develop a workable association.

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Table 6 (Continued)

Recommended Actions	Lead Agency	Implementation Steps	Timing	Cost	
Auto rapid transit (modified jitney operation)	SVPDC/ Consultant	SVPDC 1. Prepare demonstration proposal Navy 1. Supportive role: information; marketing, etc.	Feasibility study: immediate; implementation: mid-term	$400,000 (Estimated by consultant for implementing demo)	Pr fo UM
Improved bus routes and services	TTDC	TTDC 1. Transit district implements recommended program Navy 1. Navy establishes security procedures which will permit on-base routing of TTDC buses 2. Navy promotes TTDC services and conducts on-base marketing	Immediate	Operating deficit $6,000-$420,000 if all routes are implemented	UM gr (c de Lo pr of
Improved on-base bus service	Navy	Navy 1. Improve headways 2. Coordinate schedules 3. Accommodate shifting demands 4. Intensive marketing 5. Modernize equipment	Immediate to mid-term	$100,000 yr additional if service is maintained by Navy. Estimate $50,000 if contracted out	Na
Multimodal bus shelter (on-base)	Navy	Navy 1. Select site, design shelter, and construct shelter	Immediate (in progress)	$5,000-$10,000	Na
Feasibility of passenger ferry service	SVPDC, TTDC	TTDC or VPA 1. Develop proposal for study 2. Coordinate funding with other agencies 3. Contract out for feasibility study	Immediate	$50,000-$70,000 with region matching 10%	Jo Bi Co DO In Ma Ad
Government-purchased bikes	Navy	Navy 1. Assess potential bike utilization from on-base survey 2. Establish bike lanes 3. Procure bikes 4. Administer program 5. Promote bike use	Immediate to mid-term	$45,000 (excluding cost of painting bike lanes & signs)	Na
Feasibility of covered pedestrian walkways	Navy	Navy 1. Combine with on-base survey 2. Coordinate with NAVFAC study	Concurrently with NAVFAC study	1 man-month ($3,000)	Na
Feasibility of on-base automated guideway transit (AGT)	Consultant	Navy 1. Promote availability of base for a feasibility study to be sponsored by another agency or private concern	Short to midterm feasibility study	No cost to Fifth Naval District ($60,000-$80,000 sponsor cost)	Na pl La

Table 6 (Continued)

Timing	Cost	Source of Funds	Comments
Feasibility study: immediate; implementation: mid-term	$400,000 (Estimated by consultant for implementing demo)	Private foundation or UMTA	Primary interest in the community; Navy commute corridors could be used for demonstration. Unified Work Program Task #404-15.11
Immediate	Operating deficit $6,000-$420,000 if all routes are implemented	UMTA formula grants (covers 50% of deficit). Local community prorated share of deficit	Although the SRI recommendations are directed at service improvements that will not run a deficit, it is possible that deficits will occur initially and be reduced over time as the marketing program takes effect and auto disincentives are implemented
Immediate to mid-term	$100,000 yr additional if service is maintained by Navy. Estimate $50,000 if contracted out	Navy	Major improvements could be achieved if service is contracted out, particularly bus amenities
Immediate (in progress)	$5,000-$10,000	Navy	An attractive, multimodal shelter as a key ingredient to enhancing the acceptance of transit services New plexiglass shelters have been ordered
Immediate	$50,000-$70,000 with region matching 10%	Joint funded: Bicentennial Committee DOT-UMTA Interior Maritime Admin.	A unique opportunity to design commuter service in conjunction with tourist/ recreation service in view of the bicentennial celebration. Unified work program - Task #404-15.8
Immediate to mid-term	$45,000 (excluding cost of painting bike lanes & signs)	Navy	Insignificant capital cost in relation to the potential to reduce vehicle miles traveled
Concurrently with NAVFAC study	1 man-month ($3,000)	Navy	Not a high priority
Short to midterm feasibility study	No cost to Fifth Naval District ($60,000-$80,000 sponsor cost)	Navy R&D, Applied Physics Lab., UMTA, R&D	Sewells Point may provide potentially an ideal site to establish the future role of AGT on military bases

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Table 6 (Concluded)

Recommended Actions	Lead Agency	Implementation Steps	Timing	Cost
Investigate effectiveness of staggered work hours & flex-time	Navy	Navy 1. Monitor results of program in terms of congestion, energy conservation, and pollution abatement	Immediate (within six months)	1 man-month
Encourage housing applicants to consider commute distance; reevaluate housing criteria	Navy	Navy 1. Integrate housing plan with master plan and employee incentives to achieve more energy efficiency criteria for design, sifting, and housing assignments	Immediate to midterm	Minimal
Study of trans-Hampton roads Transportation requirements	SVPDC/ PPDC	SVPDC/PPDC 1. Joint study effort that includes consideration of Navy commuters Navy 1. Provide all necessary information to support study	Immediate	$10,000
Transportation Information Center	TTDC	TTDC 1. Phase I: design of center functions and requirements 2. Phase II: Implement center	Phase I: immediate Phase II: midterm	Phase I: $3, Phase II: $$ (excluding o capital cost
Transit marketing	TTDC	TTDC 1. Implement program 2. Graphics improvement 3. Intensified marketing 4. Expand successful concepts 5. UMTA marketing services 6. Professional marketing agency 7. Educational programs 8. Employ full-time marketing coordinator	Immediate or as service is available	$75,000 (full progra
Navy marketing program	Navy-Public Affairs Office	Navy 1. Implement program as recommended 2. Prime responsibility of Navy transportation coordinator	Immediate and continuing	$20,000/yr
Establish in-house task function	Navy	Navy 1. Define task, function and organizational location of full-time transportation coordinator 2. Develop linkages with community transportation planning and implementation process	Immediate (already in progress) and continuing	2 man-months $10,000 for initial stu + salary on implemented

Table 6 (Concluded)

	Timing	Cost	Source of Funds	Comments
in con- batement	Immediate (within six months)	1 man-month	Navy	Navy base provides an excellent site to test staggered and flexible hour options
mas- atives iciency g, and	Immediate to midterm	Minimal	Navy	This is a general Navy policy decision worthy of study and consideration
cludes ters rma-	Immediate	$10,000	UMTA Technical Studies Unified Work Program SVPDC/77DC	Unified Work Program Task #405-15.9
	Phase I: immediate Phase II: midterm	Phase I: $3,750 Phase II: $54,200 (excluding onetime capital costs)	Section 5 Funds; SVPDC; Federal Urban Funds	The multimodal Transit Information Center and marketing program are considered essential to most all action options identified Unified Work Program #404-14.9
cy	Immediate or as service is available	$75,000 (full program)	Participating jurisdiction and Navy share costs	A high priority to ensure successful implementation of action plan Unified Work Program Task #404-15.6
ended y	Immediate and continuing	$20,000/yr	Navy	The project team highly recommends that these be given first priority along with any transit innovations
rgan- time nity	Immediate (already in progress) and continuing	2 man-months, $10,000 for initial study + salary once implemented	Navy	To maintain a continuing process of Navy-community joint implementation of transit improvements, a full-time individual needs to be assigned. In addition, such a transit coordinator would implement the Navy marketing program

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Table 7 shows proportionate program costs estimated by SRI for actions under four categories of funding sources: Navy, Community, Federal Demonstration Programs, and Others.

Table 7

PROPORTIONATE COSTS FOR NEAR-TERM OPTIONS

All-Navy actions	In-kind service	Cost
Survey of on-base auto travel	1-2 man-months	$ 5,000
Carpool program	4-man-months	20,000
Auto disincentives	6-man-months	
Taxi service marketing		1,000
On-base bus		50,000 -100,000
Multi-modal bus shelter		5,000 - 10,000
Government-purchased bikes		45,000
Investigate staggered and flexible work hours	1 man-month	5,000
In-house task and function (study)	2 man-months	10,000
Pedestrian walkway	1 man-month	3,000
Navy marketing program	6 man-months	20,000
TOTAL	22 man-months	$164,000-$219,000
Community Actions		
Carpool Matching Program	4 man-months	$ 22,600
Improved Bus Routes and Services		6,000-420,000
Study of Trans-Hampton Roads		10,000
Feasibility of Passenger Ferry Service	(to be shared)	50-70,000
Transportation Information Center		57,950
Transit Marketing		75,000
TOTAL		$221,550-$655,550
Federal DEMO Projects		
Monitoring energy factor of alternatives	FEA,EPA	$ 50,000
Leased vans	DOT-UMTA	430,300
Private hauler association	DOT-UMTA	50,000
TOTAL		$530,300
Others		
Auto share concept	Interested sponsor	$ 30,000
Auto-rapid transit (feasibility & demo)	DOT-UMTA	400,000
Automated guideway transit	Interested sponsor	10,000-80,000
Fixed route taxi service	Apollo Cab Co.	minimal
TOTAL		$310,000

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The Action Plan is the product of a cooperative process and is designed to be responsive to the Transit Development Program and the existing transportation planning process in the Tidewater community. Formal policy review and approval of all applications for special funding of various elements of the program where the community is designated as lead agency, are to be requested through the Continuing Transportation Study Technical and Policy Committees of the region. Because the transportation needs and conditions change over time, the intent of the Action Program is to invite modification as needed.

D. Progress to Date in Tidewater

The following briefly describes the progress during the eight months following the initiation of the Tidewater demonstration project.

1. Navy Actions

On behalf of the Navy in Tidewater, the Commandant and his Chief of Staff made a firm commitment to begin implementing the portions of the Action Plan where the Navy is designated lead agency. The Admiral made a further commitment to continue public endorsement of the program on behalf of the Navy and to encourage rapid response from Tidewater communities in an effort to accelerate the implementation. Since the time the Action Program was endorsed (April of 1975--seven months before this writing), the Navy has taken action on the following:

In-house Task and Function--Two professional planners from the Engineering Field Division Installation Planning Office have been assigned to the Commandant's staff to assume the responsibilities for coordinating the Navy Transportation Program. Additionally, the Energy Coordinator for the Fifth Naval District has assumed responsibilities for portions of the action program.

Carpool Program--The existing car pool matching program for the Navy is being updated by revising the survey questionnaire to use personnel records and to conform to regional transportation travel zones. A car-pool-only gate is being planned for the Sewells Point Complex to give priority service to carpoolers. Car pool marketing material has been collected by the base Public Affairs Office for initiating a comprehensive marketing program. The District Energy Coordinator published an article in the Navy newspaper Soundings entitled "Want to Save $1,000 per Year? Join a Carpool." The article points out the benefits of sharing rides for Navy commuters.

Bus Shelters--The base Public Works Office is in the process of rebuilding bus shelters on Sewells Point and has ordered for the base

several new plexiglas shelters that will match the shelters used in the region.

Bus Schedules--The on-base bus schedule for Sewells Point has been modified to coordinate with public buses coming to the perimeter of the base.

Navy Marketing Program--A slide and soundtrack presentation has been prepared by the Fifth Naval District Headquarters Office on the Navy-Community transportation program. The slide presentation is available for the Admiral's use in public presentations and the Commanding Officers' use for Navy presentations at the five separate bases. For the Open-Forum section of the Navy newspaper the Public Affairs Office interviewed Navy personnel on attitudes toward using public transportation. The results of the interviews were published in the October 23 edition.

Auto Share Concept--A concept paper was prepared for the Navy to submit to ERDA for funding an electric car demonstration project at Sewells Point. The electric cars would supplement the official vehicle fleet and would test adaptability to Navy needs.

2. Tidewater Community Actions

Following approval of the Action Plan by the Study Advisory Committee, the SRI project team, accompanied by the Commandant and Fifth Naval District Energy Coordinator, presented the program to both the Technical and Policy Committees of the Continuing Transportation Study of the Southeastern Virginia Planning District Commission. The results of these presentations are summarized below.

Results of the Technical Committee Presentation: The Navy Area-Wide Transportation Program was unanimously "adopted in concept" by the SVPDC Technical Committee and was referred to a subcommittee responsible for developing the fiscal year 1975-76 Transportation Unified Work Program. The committee was requested to consider the Action Program for adoption into next year's budgeted transportation planning program.

- At the same meeting the SVPDC staff requested approval to ask the Federal Executive Association to appoint a nonvoting member to the Technical Committee to represent the military in the area. The motion was approved. The significance of this action is that the Navy would have active representation in the regional transportation planning process.

- In June of this year the Federal Executive Association voted to have the Navy represent federal agencies in Tidewater on the SVPDC Technical Committee. A nonvoting

Navy representative also now sits on the TTDC Technical Committee.

- The Executive Director of the Tidewater Transportation District Commission, requested a revision to the Unified Work Program FY 1974-75 to include the Navy-Community Area-Wide Transportation Action Plan (SRI). The motion was approved and is now element #404-14.7 with a funding level of $3600 allocated to SVPDC for staff support to the study.

Results of the SVPDC Continuing Transportation Study Policy Committee Representation: The Fifth Naval District Commandant, along with the SRI project team, made the presentation of the Navy Area-Wide Transportation Study Program to the Policy Committee. As the area-wide spokesman for the Navy, the Admiral expressed his support and intent to move ahead on the program from the Navy side and asked for the support and action of the community.

The Policy committee approved the Action Program in concept and stated that they would act on elements of the plan as they are recommended to them by the Technical Committee.

Following the Tidewater presentations and official approval of the Navy Area-wide Transportation Action Plan, the project team has been informed that the subcommittee of the SVPDC Continuing Transportation Technical Committee has included from the Navy Area-Wide Action Program the following elements in the 1975-76 Unified Work Program for funding.

Military carpool survey (data processing)
Development of Transit Information Center
Design of a Transportation Marketing Plan
Demand-Responsive Transportation Plan
Feasibility Study for Water Transportation
Auto Rapid-Transit Study
Joint study with Peninsula Planning Commission on toll removal from Hampton Roads Bridge
Park and ride lots

The progress to date on the above actions is summarized below.

Military Car Pool Survey--SVPDC has budgeted $2600 to provide technical assistance to the Navy for organizing their car pool program. Specifically, the SVPDC staff is providing guidance on the structure and content of the car pool matching program so that it will conform with the regional method of determining traffic zones.

Development of a Transit Information Center--This is element #404-14.9 of the Unified Work Program, budgeted for $7,000 for FY 1975-76.

The lead agency (TTDC) has prepared a scope of work and project description and will advertise for consultant assistance in the near future.

Design of a Transportation Marketing Plan--This action is element #405-15.6 in the Unified Work program, budgeted for $5,200. The TTDC, as lead agency, has already submitted a request for proposal to retain a consultant to begin work. The marketing program envisioned by the TTDC is area-wide and will include the Navy residents as a vital part of the transit market.

Demand Responsive Transportation Plan--The action is element #405-15.5 in the Unified Work Program, budgeted for $10,000. The TTDC has prepared the scope of work for this element and will soon submit a request for proposal from qualified consultants to assist in the work.

Feasibility Study for Water Transportation--This is element #405-15.8 in the Unified Work Program, budgeted for $5,000. A scope of work has been prepared for this study and TTDC will retain a consultant to do the work this year.

Park and Ride Lots--TTDC is budgeted for $2,000 under element #404-14.1 of the Unified Work Program to work with the SVPDC and the Virginia Department of Highways and Transportation to analyze the potential for fringe area parking sites in the region.

Bus Routes from Virginia Beach--The City of Virginia Beach has initiated a new express bus service to the CINCLANTFLEET compound at Sewells Point. The service is by subscription and had 50 applicants the first week. TTDC will be taking over the Virginia Beach bus system, but before Dial-A-Bus begins, both the city and SVPDC must approve plans. TTDC has taken over transit service in Portsmouth, and an advertising campaign to market service to the shipyard has begun.

The Tidewater Transportation District Commission has prepared the proposal to DOT-UMTA for funding the Paratransit program (for example, Van Pool and Private Haulers Association). The proposal estimates a cost of $500,000 for the program. The proposal has received the approval of the SVPDC Technical and Policy Committees and will be submitted formally to DOT in November of 1975. SRI contact with DOT program managers evidenced high interest by federal transportation R&D for this demonstration action. UMTA representatives already have visited the site and spoken with Navy and community stakeholders about the project.

The city of Norfolk has hired the A-T-E transit management firm to analyze the requirements for bus service to Sewells Point. The consultant has not yet issued a report.

3. Federal Agency Action

The Virginia Department of Highways and Transportation, on behalf of the Federal Highway Administration, has requested copies of the Navy Area-Wide Transportation Action Program for inclusion in their annual report as an example of progressive transportation work.

Program Officers from the Office of Federal Activities, Environmental Protection Agency; the Federal Energy Administration; the President's Council on Environmental Quality; and the Office of the Secretary of the Department of Transportation have all expressed a high degree of interest in the Tidewater demonstration. They would like to refer to the study results as a case-in-point for successful cooperative programs.

4. Summary

The response since the initiation of the Tidewater demonstrative project has been exceptionally encouraging. Though the actual implementation of actions seems slow, the cooperative process is rapidly evolving in Tidewater. The willingness of both the Fifth Naval District and the Tidewater Community to sponsor immediate actions is a positive indication that the program is off to a good start. The implementation of the actions scheduled for this year will encourage further actions that could collectively have a substantial impact on the Tidewater Community.

V THE DEMONSTRATION PROJECT IN RETROSPECT

The Tidewater demonstration project represented a new and challenging research effort for both the Navy's R&D program and SRI. The concept for a joint Navy-Community approach to problem solving in passenger transportation was as yet untried.

Though the progress in Tidewater indicates a successful project, no precedent exists for evaluating the success of the research approach. Therefore, it is useful to reflect on some of the key attributes and recommended additions of the demonstration project and to begin assessing the potential application of the approach to other communities where either a military or civilian employer represents the predominant commuter population.

A. Key Observations

The interactive process evolved in Tidewater, Virginia, as the study progressed. The basic format for the study was developed by the project team (described in detail in Section II); however, both military and community stakeholders were encouraged to provide input to the process throughout the study. Throughout the study, the project team met to specifically discuss the positive aspects of the overall approach and to recommend improvements as they emerged from the inputs after each major presentation of the study to Navy program representatives and community groups. The following key observations highlight the positive aspects of the approach and identify where specific additions could enhance future applications.

1. Positive Aspects

A Third-Party Facilitator--The benefits of using an objective third party (in this case, the SRI project team) were discussed at several presentations. The reactions were mixed regarding the need to use a consultant versus the effect of leadership by the Navy Engineering Field Division Planning office. From SRI's perspective, the identifiable benefits of having a consultant were as follows: the project team could draw on experts from a wide range of disciplines from within SRI, the project schedule would be bound by contract and therefore not subject to disruption by a change in priority of assignment by a commanding officer, an objective third party would be unbiased in initiating the approach and establishing the institutional linkages necessary for implementing the ongoing process, and expertise offered by an established transportation consultant would lend credibility to the study results. On the other hand, had a Navy team initiated the process, they would have provided more complete knowledge

of ongoing Navy programs to the study that may have effectively enhanced the Action Program.

Early Contact with the Full Range of Stakeholders--The general consensus among participants in the studies was that identifying and contacting the full range stakeholders in Tidewater was an essential task in the approach. Importantly, the stakeholders included were not only the decision makers, but also staff persons responsible for transportation-related activities. (Appendix A identifies persons contacted in the Tidewater project.) Each stakeholder was briefed on the objectives of the study and invited to participate in providing background information and offering suggestions. The early exchange of information between stakeholders was also important so that each had a better feel for the perspective of the others so that input resulting from the interactions of ideas would help to formulate and implement the objectives of the cooperative process.

Establishing the Study Advisory Committee--The formation of an advisory committee of key stakeholders not only provided an arena for the Navy and community stakeholders to informally discuss mutual objectives, but also helped to establish the institutional interface necessary for the cooperative process. The committee also helped to provide feedback on the study approach to the project team and to their respective organizations (see Appendix B for sample correspondence).

Integration of Action Program into Ongoing Transportation Process--The demonstration would be incomplete without the formal acceptance of the Navy Area-Wide Transportation Action Program into the ongoing transportation planning process of the region. The endorsement by the technical and policy committees of the regional planning commission and the incorporation of specific actions into their unified work program for regional transportation were necessary to start the process in motion. Without these steps, the study would remain another research report rather than an implemented Action Program.

A Designed Navy Contact and Commandant Support for Transportation Actions--A designated point of contact within the Navy and the personal support of the Commandant were key attributes in successful operation on the Tidewater project. Paralleling this was the provision for interchange of thought where the regional planning agencies and city managers could speak on behalf of the community and the commandant could represent the objectives and responsibilities of the Fifth Naval District. The established point of contact (in the Tidewater project--the District Energy Coordinator and Engineering Field Division Planning Office) for carrying out the Navy function in the Action Plan provides continuity to cooperative action.

2. Recommended Additions

Contact with Navy Transportation Users--The study effort in Tidewater concentrated principally on stakeholders and key decision makers within the Navy. Although initial plans included user forums for Navy personnel, the on-site time was spent on other tasks. Some contact was made with persons operating a subscription bus service to Navy bases and with a random sampling of Navy personnel, but no forums were organized to obtain feedback from potential transit users. The number of persons attracted to the transit alternatives contributes to the ultimate success of the program; therefore an early effort to include users in the decision-making process would enhance the probability of success.

Evaluation Method for the Action Program--The Navy Area-Wide Action Program (Appendix C) provides a comprehensive list of possible transportation actions for the Tidewater region. Though the criteria were referred to while the Action Program was evolving, no provision was made to objectively evaluate each action, or collection of actions, against the criteria. An objective evaluation tool would assist decision makers in setting priorities in the Action Program.

B. Transferability

Two major project presentations were made during the study effort, with the objective of initiating discussions on the transferability of the approach used in Tidewater to other Navy areas. The first briefing (10 June 1975 at SRI-Washington) was to Navy Program Officers in Washington and selected federal agency representatives. The second briefing (21 October 1975 in Charleston, S.C.) was to the annual NAVFAC Real Estate and Planning conference. The following summaries are representative of the discussions on transferability of the study approach resulting from those presentations.

Application to Proposed Guidelines for the Preparation of Naval Regional System Plans (referenced in NAVFAC Instruction 11010.45C)--The approach developed for the Tidewater project could have application to a number of other specific Navy-Community problems such as solid waste disposal, water supply and treatment, land-use planning, and to regional planning in general.

Transportation Program at Other Navy Sites--The concensus of the discussions at the project presentations was that the initiation of the process in other Navy communities should be the responsibility of Engineering Field Divisions, rather than headquarters R&D programs. Thus, the process is out of the "research" category and is ready for further "development" and implementation. The use of a consultant or an in-house effort was discussed for areas such as the planned Trident facility, San Diego, Charleston, Pearl Harbor, and the Philadelphia Shipyard. With minor adjustments

to accommodate different institutional arrangements, the approach used in Tidewater should be readily transferable to these areas.

Application to Other Military Services and Major Employees in Metropolitan Regions--The approach used in Tidewater could be used in any major military community, and only the stakeholders would change. The approach could even have application in a community where one or more industries predominate (e.g., Seattle/Boeing Aerospace Ind.) because it depends primarily on the effective cooperative activities between major users of transportation and the planners and suppliers of these transportation services.

C. The Next Steps

The demonstration project in Tidewater is merely the beginning of an effort that could have lasting implications for regional transportation planning. This first attempt at establishing a cooperative transportation program in a military community surfaced a number of issues that need to be resolved. Section V-A above discussed some of the recommended additions identified for the study approach. Other aspects that emerged, such as, a need for user feedback and an objective evaluation methodology to apply to the Action Plan, are incorporated into the following research recommendation:

1. Development of Evaluation, Monitoring, and Transferability Techniques

The development of evaluation, monitoring, and transferability techniques for a Navy transportation program--the objective of this research recommendation is to develop qualitative and quantitative evaluation criteria for use in evaluating the Navy Area-Wide Passenger Transportation Program. In addition, the results of such a project could provide the information necessary to make the approach operational within the guidelines of existing environmental and shore facilities planning programs.

Both manual and computerized methods for assessing the effectiveness of transportation actions against criteria should be considered. Transportation criteria readily amenable to quantification (for example, energy use, air pollution, land use, travel time, and noise) could be measured by proxy against vehicle miles traveled (VMT) and gate counts. Other criteria could be evaluated by use of attitudinal surveys for observing behavior patterns.

A number of benefits from the application of objective measurement techniques can be identified. Some of these benefits are:

- A quantitative assessment of the effectiveness of each action in the Navy Area-Wide Transportation Action Program, as measured by evaluation criteria, when tabulated

along with the costs for implementation, will provide valuable input to setting the priority of actions in the decision-making process, and the necessary momentum for implementing portions of the plan. For example, though the initial community investment for improved bus service to naval installations in Tidewater is high, the long-term benefits (for example, reduced need for roadway expansion; less traffic congestion, thus, fewer traffic controls; reduced accidents; and the like) may justify the expenditure.

- The ability to point out the merits of the pilot program in a quantitative format will aid in generating the interest of Engineering Field Divisions in initiating similar programs at other naval installations in the United States.

- An objective evaluation of the relationship that the Navy Transportation Program has to established Navy standards and goals (for example, energy conservation such as OPNAV Instruction 4100.5, environmental protection; reduced emissions and noise levels, and improved land use) will make periodic monitoring and accounting possible on an installation and Navy-wide basis. For example, a statement such as the following would be possible: The Navy, through its Transportation Program, reduced parking space requirements at five major installations and saved over 500 acres of prime government property. Or: Over 40,000 Navy employees carpooled this year, saving an estimated 10,000,000 gallons of gasoline.

- The final, and most wide-reaching advantage of objective measurement of the Navy Transportation Program is the opportunity to focus on an ongoing, structured example to prove or disprove the premise that changes in transportation patterns can effectively influence land use, energy demands, and environmental quality within a region. The already established date base and the easy access to further data as transportation actions are implemented, or simulated, offers a unique source of information to R&D programs for other agencies (primarily ERDA, FEA, EPA, and DOT) grappling with these questions.

SRI has recently (12 November 1975) submitted a proposal to the Office of Naval Research addressing the above work.

2. Further Supportive Action

Issues outside of the context of the approach used in Tidewater, but directly related to its ultimate success, are two supportive actions discussed below.

Funding--Outside funds and supportive actions are needed for the Tidewater demonstration project. As with any demonstration project, participants in the demonstration area are limited by existing budgetary constraints. The Tidewater community already has vested a substantial amount of money and staff time in the study effort and all indications show their continued support. The objective, however, for an effective demonstration project is to shorten the time required for implementation and to proceed with aspects of the plan that may normally be considered risky investments. The value of this approach lies in the ability to structure and modify the demonstration to prove or disprove specific research premises. Many of the transportation actions recommended for Tidewater were under-funded (example: the cost for the recommended marketing program was planned for an estimated $75,000 funding level, but actually budgeted for $7,000). To do an effective job, a more substantial effort is necessary.

Official Recognition--A final recommendation targets the need for official recognition for the project and the development of a Navy-wide strategy for implementing cooperative transportation programs in other locales.

Official recognition of the project and the concept will depend on the effectiveness of information dissemination from this study. If the results of the Tidewater demonstration are convincing, the response should advocate further attempts to initiate the process in other areas. Navy Program Officers are encouraged to give recognition to the Navy commute problem and objectives in official instructions and guidelines (example: the OPNAV instruction No. 4100.5 for carpooling in the energy conservation guidelines).

Additionally, several Program Officers in agencies (for example, DOT, FEA, ERDA, EPA) outside of DoD have been briefed on the study. Each has expressed an interest in the Tidewater demonstration and a willingness to participate in an advisory capacity. As the Tidewater project develops and as other Navy communities initiate similar projects, it will be necessary to coordinate these efforts and consider the implications of such action on existing regional institution arrangements and funding programs. Federal agencies could benefit by establishing a committee of representatives from each of the military services and each interested federal agency to discuss the implications of cooperative transportation planning in metropolitan regions and to begin development of a strategy to enhance the effectiveness of the program nationwide.

D. Summary

In summary, the Navy-Tidewater demonstration project is an excellent case-in-point for how cooperative military-community planning can be initiated. Furthermore, it has demonstrated the willingness of stakeholders in a Navy community to begin interactive problem solving. The opportunities offered by this project are both timely and of national interest as

federal, state, and local community programs face the problems presented by congested cities, diminishing energy supplies, and a struggle to maintain a high quality of life.

Appendices

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Appendix A

PERSONS CONTACTED DURING DEVELOPMENT OF ACTION PROGRAM

Tidewater Area

Norfolk

Copenhaver, David D., Research Director, Norfolk Economic Development Council

Gilbert, Francis B., Director, Information Center of Hampton Roads

Jordan, Fenton, Assistant Director of Engineering and Construction

Massie, Ronald, Assistant to the City Manager, Norfolk

Miner, R. W., Jr., Assistant Director, Dept. of City Planning, City of Norfolk

Pence, Herb, Jr., former Marketing Manager, Tidewater Metro Transit

Rowe, John, Marketing Research, City of Norfolk

Scott, Kenneth R., Executive Director, Norfolk Port & Industrial Authority

Spann, Jerry, Vice President, Chamber of Commerce

Spritz, Alan H., City Planner, Norfolk

Stedfast, Philip A., Director, Dept. of City Planning, Norfolk

Williard, Daniel S., President, Shawn's Launch Service

Virginia Beach

Carrington, Charles C., Director of Planning (former)

Dunford, Richard, Office Assistant

Knight, Kenneth A., Urban Planner

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Tennis, George, Assistant City Manager

Wortley, Michael, Transportation Planner

Portsmouth

Cobb, Lee, Chief Planner and Deputy Director of City Planning

Horton, Phin, City Manager (former)

Moore, Brewer J., Director of City Planning

Others

Hirst, Julian, Acting City Manager, Norfolk

SVPDC--Southeastern Virginia Planning District Commission

Crosby, John, Transportation Planner

Foeller, Robert F., Executive Director

Hatheway, Gene, Transportation Planner

Kruger, David, Transportation Planner (has since left organization)

Riley, William, Planner

Tidewater Transportation District Commission

Becker, Alan Jeff, Transportation Engineer

Echols, James C., Executive Director

Sears, John, Jr., Member (TTDC)

SEVAMP

Campbell, Glenn, Executive Director

Port Authorities

Nix, John, Executive Director, Virginia Port Authority

Scott, Kenneth, Executive Director, Norfolk Port & Industrial Authority

Wilbur Smith & Associates

K., Linda, Socioeconomics Analyst

Kidd, Mike, Office Manager, Norfolk Office

Rich, Marshall, Office Manager, Richmond Office

Smith, Wilbur S., President

Webb, Mike, Traffic Engineer

Wright, Tom S., Assistant Resident Project Manager

Betsy Corporation, Abby's Employee Transportation Division

Abernathy, Betsy, Vice President

Abernathy, Harold (Abby), President and Owner

Jones, Jackie, Manager

5th Naval District

Albaugh, C. W., Lt. Cdr., Security Officer

Austin, Sandra, Planner (LANTDIV) (formerly)

Bowerman, Capt. Fred, Chief of Staff

Carder, Paul G., Civil Engineers Office

Carlson, Lee, Commander, Comptroller

Coulter, Fred W., Capt., Administrative Officer, Portsmouth Naval Shipyard

Davis, Delmer D., Naval Air Rework Facility

Falk, Norm, Lt. Cdr., Housing Facility Planner (LANTNAVFACENGCOM)

Gardner, C. Ralph, Management Analyst, Public Works Center

Garl, Mr., Public Works Center

Hartsaw, David Randolph, Cdr., Operations Officer, Dam Neck Amphibious Base

Jackson, Joseph, Engineering Equipment Operator, Public Works Center

Jackson, Ken, Contract Specialist, Navy Exchange

Johnson, Riley, Charge of on-base bus system at Sewells Point

Julian, Mrs., Navy Housing Office

Kelch, John A., Cdr., Sewells Point Operations Officer

Knudsen, Capt., Commanding Officer, Oceana Naval Air Station

McNeil, James, Inspector, Public Works Center

Martin, Jack, Lt. Cdr., Public Affairs Director

Moncritf, Walter, Head of Master Planning, LANTDIV

Moore, Dickson, Director of Planning, LANTDIVNAVFACENGCOM

Myrich, Thomas W., Public Works Center

Noel, Stafford J., Jr., Security Director, Naval Air Rework Facility

Paige, Cdr., Assistant to Commanding Officer, Little Creek Amphibious Base

Pair, Ensign, Carpooling Officer, Little Creek Amphibious Base

Puncke, F. D., Lt., Assistant to Cdr. Kelch

Rau, W. F., Capt., Executive director, Oceana Naval Air Station

Ricker, Norman, Executive Officer, Public Works Center

Robinson, Sam, Environmental Coordinator, LANTDIV

Rumble, Richard E., Rear Admiral, Commandant, Fifth Naval District

Thompson, R. L., Lt. Cdr., Sewells Point

Trapp, Mr., Public Works Center

Trueblook, Donald R., Capt., Public Works Officer, Portsmouth Naval Shipyard

Vermelya, J., Capt., Commanding Officer, Dam Neck Amphibious Base

Warren, Bob, Assistant to Director, LANTDIV

Department of Transportation

Office of the Secretary, WDC

Erickson, Robert, OST

Lutz, Theodore, Deputy Undersecretary

McCready, Ronald, Transit Planning and Assistance

UMTA--Urban Mass Transportation Administration

WDC

Bade, Nick, Office of Transit Management, in charge of Marketing

Bautz, Jim, Demonstration and Service Development Projects

Frutell, Marvin, Special Projects

Scovill, Russ

Philadelphia

Lebeau, Al, Planner

Mayer, Joe, Senior Engineer

Shipman, Herman, Senior Transportation Representative

Sullivan, Don, Transportation Representative

Torp, Ken, Transportation Representative

FHWA

WDC

Baluch, Stephen, FHWA

Fleischman, Ed, FHWA

State of Virginia Transportation Department

Campbell, R. E., Richmond

Clarke, B. R.

De Mauri, Robert, Transportation Planner, Division of State Planning and Community Affairs

Mabry, Oscar, Senior Transportation Planning Engineer

Taliafow, Mr., Elizabeth River Tunnel Authority

Department of the Navy

WDC

Farrell, Charles, Lt. Cdr., former Environmental Protection Program Manager (NAVMAT)

Hibbert, Mr., Family Housing Projects (NAVFAC)

Hurley, Stephen, Environmental Protection Program Manager (NAVFAC)

Montoya, Ben, Cdr., Environmental Quality Coordinator (NAVFAC)

Pledger, Donald B., Assistant Director, Installations Planning Division (NAVFAC)

Others

Commonwealth of Virginia

Craig, Legislative Aide

Moody, W. J., Senator, Chairman of Vehicular Connection Study

CEQ

Hills, John

FEA

Brumby, Paul, Federal Agency Management Program

Dickenson, William

EPA

Goldman, Linda, Office of Land Use and Transportation Planning (WDC)

Hidinger, Jack, Office of Land Use and Transportation Planning (WDC)

AAA

Wickstead, John, Automobile Association of America, Richmond

Peninsula Planning District Commission

Berger, Martin, Planner

Cochran, Henry M., Executive Director

Paulas, Joseph, Planner

Peninsula Transportation Commission

Foster, A. T.

Hicks, Orman E., Col.

Others

Rudy, Mr., Division Chief, Military Traffic Management, U.S. Army, Newport News

Shaffritz, Herb, President, Atlantic City Jitneymen's Association

Way, Don, Agent, Thoits Insurance, Palo Alto, California

Appendix B

CORRESPONDENCE WITH THE PROJECT ADVISORY COMMITTEE

STANFORD RESEARCH INSTITUTE
MENLO PARK, CALIFORNIA 94025
(415) 326-6200

April 22, 1975

To: ADVISORY COMMITTEE MEMBERS OF THE NAVY/COMMUNITY AREA-WIDE TRANSPORTATION STUDY

A brief note is warranted to inform you of the results of the presentation of the Navy Area-wide Transportation Action Program to the Technical and Policy Committees of the Southeastern Virginia Planning District Commission on April 9 and 10. Both committees voted to approve the program in concept. The Technical Committee referred the Action Plan to a subcommittee to consider it for incorporation in the 1975-76 Transportation Unified Work Program.*

The subcommittee met on 15 April and formally adopted seven of the action items in our program where the community was named lead agency. These include:

- A Military Carpool Survey
- Development of a Transit Information Center
- Design of a Three-Year Transportation Marketing Plan
- Development of a Demand Responsive Transportation Plan
- Feasibility Study of Water Transportation in Tidewater
- In-depth Assessment of Auto Rapid Transit
- A Joint Study with Peninsula Planning Commission of the Impacts from Lifting the Bridge Toll.

The actions named above are budgeted to begin 1 July 1975.

Additionally, on the Navy side, a Navy transit marketing program is under development; eight new plexiglass bus shelters matching the community shelters have been specified for Sewell's Point; and the Navy transportation task and function is being defined to administer other transportation items specified for Navy action.

The events mentioned above, plus the initiation of actual demonstration projects, will mark a significant step forward in establishing an ongoing transportation program between the Navy and the Tidewater community. The support and enthusiasm

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*The annual regional transportation planning program submitted to the Urban Mass Transportation Administration of the Department of Transportation.

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shown for this program will no doubt serve as a model to other military communities throughout the nation on how cooperative efforts might be used to address major issues such as transportation, energy conservation, and environmental protection.

Again, we thank you for your cooperation and for your participation on the study advisory committee. The final edited version of the Navy Area-wide Transportation Action Program will be in the mail to you early next month.

With best regards,

Marilyn D. Bagley
For the SRI Project Team

SOUTHEASTERN VIRGINIA PLANNING DISTRICT COMMISSION · 110 WEST PLUME STREET · NORFOLK · VIRGINIA · 23510

CTS : *Continuing Transportation Study*

May 20, 1975

Ms. Marilyn D. Bagley
Stamford Research Institute
Menlo Park, California 94025

Re: Navy Transportation Program (TMI:28)

Dear Ms. Bagley:

The Continuing Transportation Study Technical Committee was furnished copies of a proposed application for the Auto Rapid Transit System (ARTS) and the Community Auto Rapid Transit System (CARTS) at its meeting of May 14, 1975. We informed the Committee that the SRI final package was not ready but we hoped to have it for presentation to the Committee at its June 11 meeting.

It is our understanding that UMTA intends to make a feasibility study of the possible application of the CARTS' Program to several metropolitan areas in the nation during FY '76 with the implementation of a CARTS' Program in FY '77 in one or more metropolitan areas. The CARTS' Program is being sponsored by the MITRE Corporation and, in our opinion, has very good application to our area if properly coordinated with other concepts such as SRI has proposed. It is our desire to coordinate all of the various proposals into a comprehensive program which will best benefit our transportation needs.

On the understanding that certain "demonstration grant funds" might be available before the close of FY '75, we obtained CTS Technical Committee support for the ARTS' Program which has been endorsed by the eight local jurisdictions as an "experiment". We know that SRI also has elements of its program which could be eligible for "demonstration grant funding". It is for this reason that I urge you to provide us with further material to present to the CTS Technical Committee on June 11 so that all possible "demonstration" projects can be properly addressed within the Comprehensive Transportation Program review.

In deference to our understanding that ARTS, CARTS and SRI/Navy proposals will be reviewed within the Comprehensive Transportation Study process, along with other programs and projects from other agencies, we would not submit an official ARTS Demonstration application unless cleared after the June 11 CTS:TC meeting. We intend to have the Policy Committee meet on the 11th or shortly thereafter so that official endorsement can be given to any selective program(s).

I have transmitted unofficial copies of the ARTS proposal to various federal officials in accordance with communications which began prior to our knowledge of CARTS or SRI. We believe it has interesting potential and can be successfully integrated with and support other proposals.

Please inform us as to any additional information we may anticipate for distribution to the Committee for its consideration on June 11.

Sincerely,

Robert F. Foeller
Secretary

RFF:ve

cc: Cmdr. Carlson, Navy
J. Echols, TTDC
F. Jordan, CTS:TC
H. M. Myers, CTS:PC
D. S. Curling, Chrm. SVPDC

SOUTHEASTERN VIRGINIA
PLANNING DISTRICT COMMISSION

CURLING · CHAIRMAN
VICE CHAIRMAN
HOUSE JR · TREAS

110 W. PLUME STREET, NORFOLK, VA. 23510
TELEPHONE AREA CODE 804 · 622-4381
ROBERT F. FOELLER · EXEC DIR & SECY

April 14, 1975

Ms. Marilyn D. Bagley
Operations Analyst
Operations Evaluation
Department
Stanford Research Institute
333 Ravenswood Avenue
Menlo Park, California 94025

Dear Marilyn,

Attached are the CTS-Technical and Policy Committee listings you requested this morning.

I enjoyed making the acquaintance of you and your associates during the study. You all have done a good job to date. The final report will no doubt be a worthwhile outline of transportation alternatives for the Navy and the community.

Sincerely,

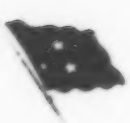
Gene Hatheway

Gene Hatheway
Transportation Planner

GH:jl

Attachments: CTS:TC/PC Lists

COMMANDANT FIFTH NAVAL DISTRICT



COMMANDER NAVAL BASE NORFOLK

28 April 1975

Dear Marilyn:

Thank you very much for your encouraging letter report of 21 April. You know, as I have said all along, this is the best Navy-community relations project that I can think of anywhere at anytime. Thanks to your fine efforts and those of your team, we may indeed have regional public transportation yet. Let's stay in touch as the plot thickens and of course I will be very happy to participate in any initiative that keeps this whole project on the front burner.

Thanks again for your fine help and keep smiling.

Sincerely,

Dick Rumble

R. E. RUMBLE
Rear Admiral, U. S. Navy

Miss Marilyn D. Bagley
Stanford Research Institute
333 Ravenswood Avenue
Menlo Park, California 94025

ROBERT H. CALLIS, III
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PORTSMOUTH
Robert W. Wentz, Jr.
Jack P. Barnes

VIRGINIA BEACH
Robert H. Callis, Jr.
Dr. J. Henry McCoy, Jr.

DEPARTMENT OF HIGHWAYS AND TRANSPORTATION
H. Gordon Blunden

TIDEWATER TRANSPORTATION COMMISSION
18 KOGER EXECUTIVE CENTER, SUITE 232 - NORFOLK, VIRGINIA 23502
(804) 490-1204

March 6, 1975

Commander Lee Carlson
Headquarters 5th Naval District
Comptrollers Office
Room 200
Norfolk, Virginia

RE: Navy-Areawide Transportation Alternatives Study -- SRI

Dear Lee:

As a follow-up to the Task Force meeting last Thursday, I offer the following comments:

1. Scope of Improvement Strategies

I am very happy with the range of transportation improvement strategies proposed by the SRI Team. I believe they have compiled a comprehensive list of previously proven changes and new and innovative changes to the transportation system that have not been tried elsewhere with the result that a comprehensive and coordinated transportation improvement package has been developed.

I believe the secret to success in implementing the proposed strategies lies in the full cooperation of the different agencies and organizations that will be involved in carrying out these strategies. I also believe that the political, policy, and technical leadership that will be required to carry out this program does exist and is ready to begin the processes required to implement the proposed demonstration project.

2. Priorities

I support including all short-term options in the first application to be filed to initiate the demonstration program. If this exceeds available resources then I propose including

the following items in the first application. They are listed in priority order.

a.) Transit marketing and information

b.) Buses-public buses

c.) Para-transit

d.) buses - on base Navy

3. Institutional role

The Tidewater Transportation Commission enthusiastically supports the proposed demonstration project and is prepared to assist in any way possible. The Commission desires to serve as project applicant on all the public transportation features of the proposed program in the South Hampton Roads area and would also be happy to serve as project applicant on any elements of the proposed demonstration program for which another applicant cannot be readily identified. In other words, the Commission would be happy to serve as an applicant for any improvement element to insure that no elements are deleted from the proposed demonstration program because an organiztion can not be found to sponsor that element.

I have already returned a rating sheet to the SRI Team. Please do not hesitate to contact me if we can be of any additional assistance. The Commission looks forward to participating in the transportation improvements to be provided by this demonstration project.

Sincerely,

TIDEWATER TRANSPORTATION COMMISSION

James C. Echols
Executive Director

JCE/kl